WONDERS OF SCIENCE IN PICTURES!

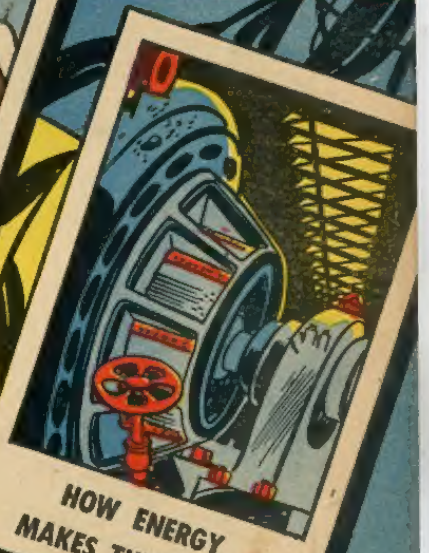
SCIENCE COMICS

10¢

MARCH No. 2

HOW MUSEUM PIECES ARE ASSEMBLED

THE FASCINATING STORY OF ANT CIVILIZATION



HOW ENERGY MAKES THINGS GO

RADAR! IT SEES THE INVISIBLE

DR. WALTER REED'S FIGHT AGAINST YELLOW FEVER

Send no money for this gorgeous flashing replica diamond ring!

LADIES! Have you ever longed to own a real diamond ring? Of course you have But today, due to the war, diamond prices are soaring higher and higher. They are beyond the reach of most people.

Yet you can still satisfy your natural desire for beautiful jewelry at a price you can easily afford. Read our great offer! Then act at once. As long as our supply lasts, we will send you on 10 day approval one of our gorgeously brilliant replica diamond solitaire rings, fashioned in the latest Sweetheart Design.

These rings are really beautiful. So full of flash and sparkle and dazzling brilliant colors.

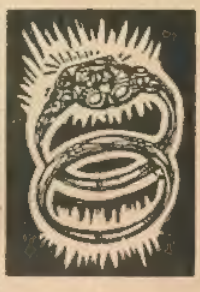
So much like real diamonds costing hundreds of dollars that they can hardly be told apart.

How your friends will admire and envy your replica diamond solitaire in its yellow or white gold color effect setting, with 2 replica diamonds on each side. But you must act fast.

PRACTICALLY GIVEN AWAY!

IF YOU ACT QUICKLY, A MAGNIFICENT MATCHING WEDDING BAND

Of course you will want a matching wedding band to go with your replica diamond solitaire. You can get yours absolutely without extra cost—just mail coupon below. The wedding band, handsomely embossed in the latest Sweetheart Design, makes a splendid companion piece to the replica diamond solitaire ring. But you must act quickly, for this amazing offer may be withdrawn at any time.



Canadian & Foreign Customers must send $2.00 cash or Money order with order

HAREM CO. (The House of Rings)
30 Church St., New York 7, N.Y.
Dept. X800

Send No Money - Fill in Coupon

CLIP AND MAIL NOW!

Here's how easy it is to get your replica diamond solitaire. Just print your name and address, ring size and state whether you prefer white gold color effect, yellow gold color effect or Sterling silver. Then mail coupon to us. We will send you your replica diamond solitaire ring together with matching wedding band, at no EXTRA COST. Guarantee.

When package arrives, pay postman $1.94 plus postage charges. Wear both rings for 10 days. If you aren't delighted—if your friends don't tell you it's the biggest bargain ever, return rings to us and get your money back.

For Ring Size . . . Cut out the strip below, wrap tightly around middle joint of ring finger. Number that meets end of chart strip is your ring size

0 1 2 3 4 5 6 7 8 9 10 11 12

HAREM CO. (The House of Rings), Dept. X800
30 Church St., New York City 7, N. Y.

Send me for 10 days trial replica diamond ring in the size and setting I have checked below. You are also to include without extra cost the matching wedding band. When package arrives, I will deposit with postman $1.94 plus postage charges. If at the end of 10 days I wish to return the rings you are to refund my money.

Size ☐ Yellow Gold Color ☐ White Gold Color Effect ☐ Sterling Silver ☐

NAME .....
PLEASE PRINT

ADDRESS .....

CITY ..... STATE .....

NOTE: If you enclose $2.00 with your order (Cash or money order) we will pay postage. Of course, you still have the privilege of our 10 days trial and money back guarantee.

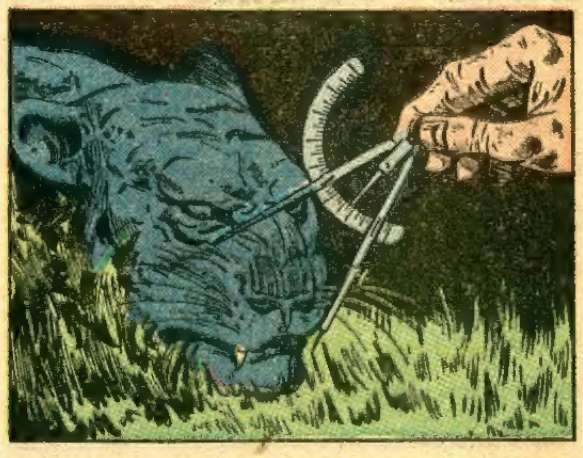
SCIENCE COMICS, March, 1946, Number 2. Published bi-monthly by Humor Publications, Inc. Office of publication, 29 Worthington Street, Springfield 3, Mass. Editorial and Executive offices, 67 West 44th Street, New York 18, N. Y. Application for Second Class entry pending at the Post Office, at Springfield, Mass. Single copies, 10c; 12 issues, $1.20. Please send all subscriptions and correspondence to 67 West 44th Street, New York 18, N. Y.

Copyright, 1945, by Humor Publications, Inc. Printed in U.S.A.

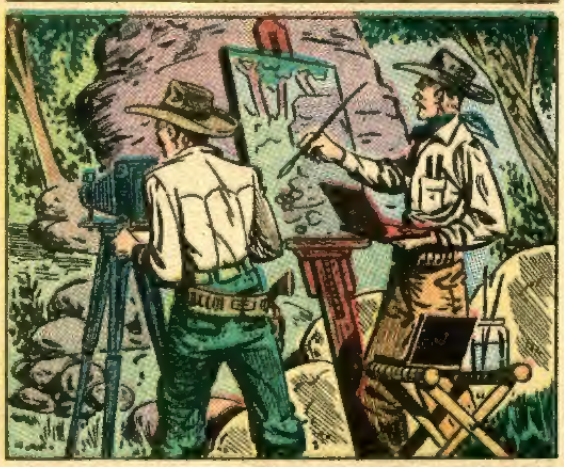
HOW
MUSEUM GROUPS
ARE ASSEMBLED
DOC
YEARS AGO, MUSEUMS ACQUIRED ANIMALS, HAD A TAXIDERMIST STUFF THEM, AND PUT THEM ON PUBLIC VIEW. TODAY, ALL THAT IS CHANGED, AND THE MODERN MUSEUMS COMBINE SCIENCE WITH SCULPTURE AND PAINTING TO ACHIEVE THE REALISTIC EFFECTS YOU SEE IN THE "HABITAT GROUPS". HERE IS HOW IT IS DONE, FROM START TO FINISH!!
THE MUSEUM EXPEDITION ARRIVES AT ITS DESTINATION--THE ROCKY MTS.
WE'VE GOT EVERYTHING SET UP! NOW LET'S GET THAT PANTHER WE'VE HEARD IS SUCH A WONDERFUL SPECIMEN!
DO WE HAVE THE MEASUREMENT CHARTS? CALIPERS? WATER COLOR OUTFITS? BAGS FOR THE SHRUBBERY? GOOD! THEN LETS MOVE!!

SINCE THESE EXPEDITION LEADERS ARE EXPERT BIG GAME HUNTERS, THEY STALK THE GAME WITH ALL THE CUNNING OF MAN AGAINST BEAST!

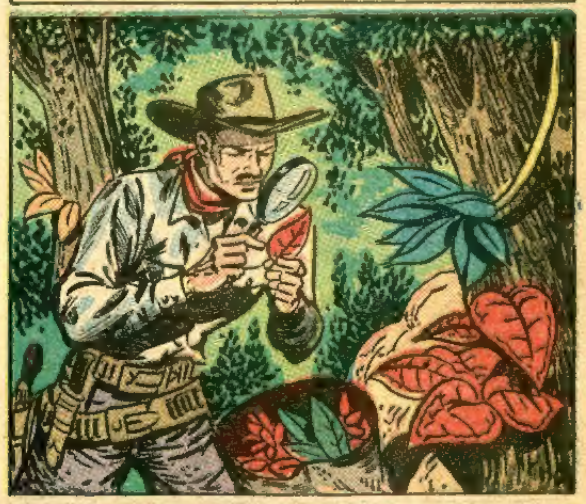
EVERY DIMENSION OF THE BEAST IS CAREFULLY MEASURED AND RECORDED ON THE SPECIAL RECORD SHEETS···AFTER WHICH THE HIDE IS CAREFULLY REMOVED FROM THE ANIMAL.



MEANTIME, THE ARTIST OF THE EXPEDITION RECORDS-IN WATER COLORS-THE TRUE BACKGROUND COLORS OF THE SETTING, WHILE ANOTHER PHOTOGRAPHS THE SCENE!



STILL ANOTHER MEMBER IS RESPONSIBLE FOR GATHERING TYPICAL FOLIAGE



ACTUAL ROCKS ARE ALSO REMOVED FROM THE SCENE AS A FUTURE GUIDE!

ALL SET! AND I'M SURE GLAD WE ONLY NEED A FEW "KEY" BONES TO RECONSTRUCT THE PANTHER! OTHERWISE, WE'D NEED A TRUCK TO CARRY EVERYTHING!

LATER ··· AFTER THE EXPEDITION RETURNS TO THE MUSEUM···
I'VE ALMOST FINISHED THIS SMALL CLAY MODEL OF THE PANTHER!
THIS MODEL OF A MULE DEER IS ALREADY FINISHED, DOCTOR!
NOW OUR PROBLEM IS TO GET AN INTERESTING GROUPING OF THIS SET!
THINK THAT DOES IT! WE'LL HAVE THE STAFF APPROVE IT AND THEN WE'LL START TO WORK ON THE FULL-SCALE GROUP!
I THINK THIS IS EXCELLENT! BUT I WOULD SUGGEST MOVING THIS ROCK SLIGHTLY TO THE LEFT IN THE FINISHED MODEL!
WITH THE SMALL MODEL SET APPROVED BY THE CURATOR AND THE STAFF, THE SCULPTORS, ARTISTS, DESIGNERS, AND OTHERS BEGIN THEIR WORK ON THE FULL-SCALE SET!
4

CARPENTERS ARE SET TO WORK BUILDING "THE STAGE"....
THIS CERTAINLY LOOKS PRETTY CRUDE RIGHT NOW!
YES, BUT WE'VE GOT THE BASIC MEASUREMENTS JUST AS THEY'RE CALLED FOR!
THIS LOOKS LIKE NOTHING BUT FINE-MESHED CHICKEN WIRE TO ME!
IT'S JUST ABOUT THE SAME AS THAT! BUT IT'S BEEN FOUND TO SERVE OUR PURPOSE BEST!
ONCE WE GET THIS THIN LAYER OF PLASTER OVER THE WIRE, OUR JOB IS ABOUT DONE!
HOW COME THESE STAGES AREN'T MORE SOLID? THERE'S AN AWFUL LOT OF "GIVE" TO THIS SETTING!
THAT'S THE IDEA OF IT! THIS SEMI-FLEXIBLE CONSTRUCTION WITHSTANDS THE VIBRATIONS OF WINDS AND THE RUMBLE OF CITY TRAFFIC THE BEST!
THIS DOESN'T LOOK TOO REAL TO ME!
BUT WE'RE UP TOO CLOSE TO IT! WAIT UNTIL WE GET IT HUNG AND STEP BACK!
I GUESS YOU'RE RIGHT! IT SURE LOOKS LIKE TREES ALL RIGHT!
5

IN THE PROP ROOM—
I THINK WE'VE ABOUT COMPLETED ALL THE FOLIAGE CALLED FOR IN THE SKETCHES AND DIAGRAMS! CHECK IT, WILL YOU?
I ALREADY HAVE CHECKED AND WE'RE FINISHED WITH OUR ARTIFICIAL LEAVES AND ROCKS AND PLANTS!
REMEMBER, ALL THESE FLOWERS AND THINGS HAVE TO BE PLACED EXACTLY AS SHOWN IN THE FINAL SKETCHES THEY GAVE US!
I FEEL LIKE HERCULES LUGGING ALL THESE ROCKS AROUND! GOOD THING THEY'RE ONLY MADE OF PAPIER-MACHE!
PLACING EACH ROCK, FLOWER AND TWIG IN THE EXACT POSITION SHOWN ON THEIR SKETCHES, THE GIRLS WORK SLOWLY TO ACHIEVE A REALISTIC EFFECT!
AFTER ALL IS FINISHED...
THAT'S THE END OF OUR JOB! AND I CAN ALMOST SEE THE DEER AND PANTHER COMING ALONG SOMEWHERE!
IT WON'T BE LONG UNTIL THEY DO COME ALONG! THE TAXIDERMY DEPARTMENT IS COMPLETING THE SPECIMENS NOW!
6

THE TAXIDERMY DEPARTMENT WORKS FROM THE ORIGINAL PANTHER'S SKULL, ONE REAR LEG AND ONE FRONT LEG ··· SHAPING THE REST OF THE ANIMAL'S BONES FROM WIRE

NEXT, USING THE EXACT MEASUREMENTS OF THE ORIGINAL BEAST AS WELL AS PHOTOGRAPHS, THE ANIMAL IS MODELED IN CLAY AND A PLASTIC CAST IS THEN FORMED, OVER WHICH THE ANIMAL'S HIDE WILL BE FITTED!

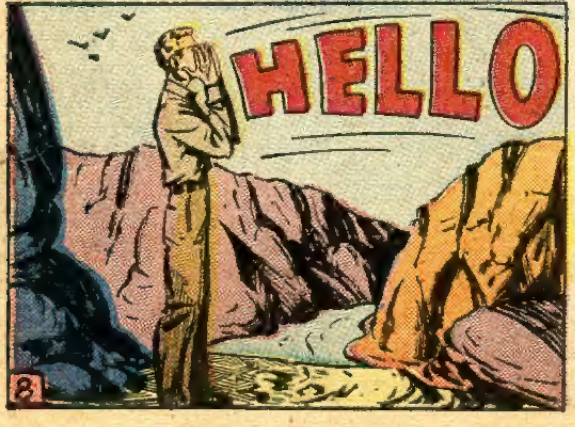
FROM THE TIME THE EXPEDITION LEFT TO ACQUIRE THE SPECIMENS UNTIL THE SET IS FINALLY COMPLETED AT THE MUSEUM OFTEN AS LONG AS TWO YEARS ELAPSE! BUT THE RESULT IS A TRIBUTE TO MODERN SCIENCE AND THE TEAMWORK OF A NUMBER OF SKILLED TECHNICIANS OF NATURAL SCIENCE!

END

RADAR:

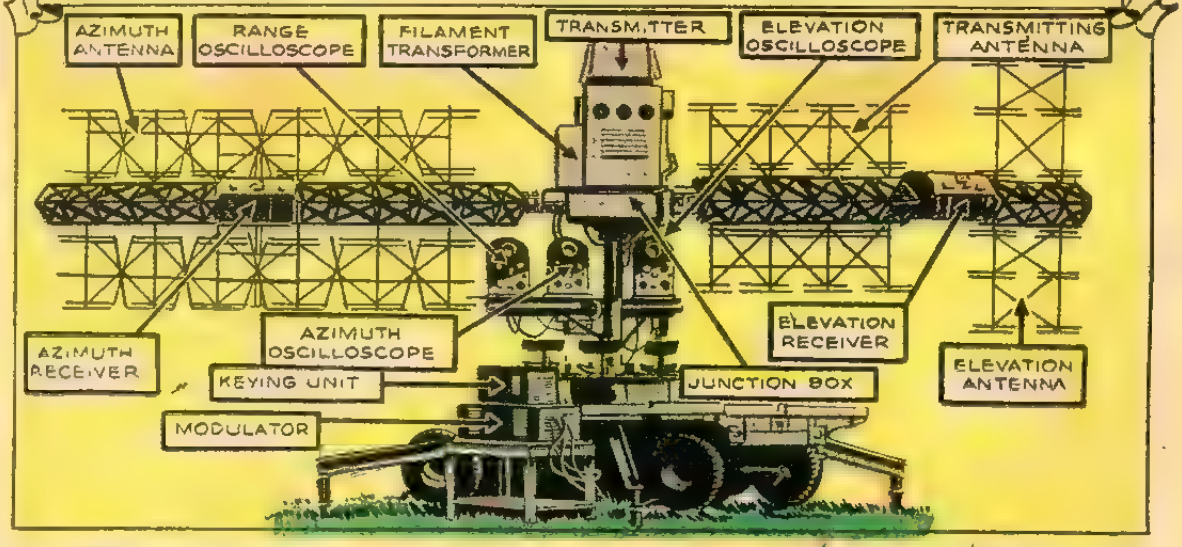
IT SEES THE INVISIBLE

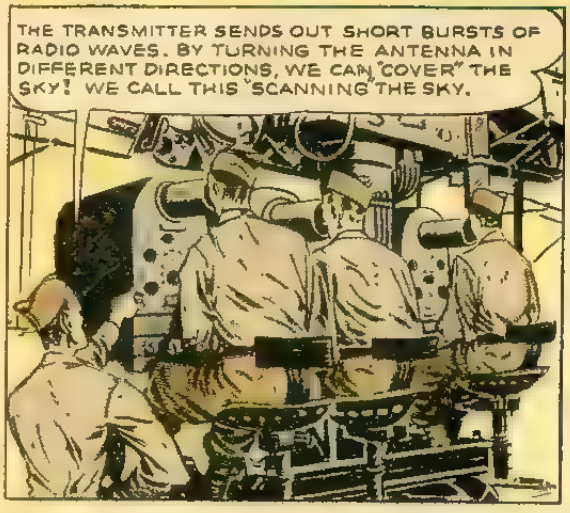
BASICALLY, RADAR ACTS ON THE SAME PRINCIPLE AS A VOICE ECHO····

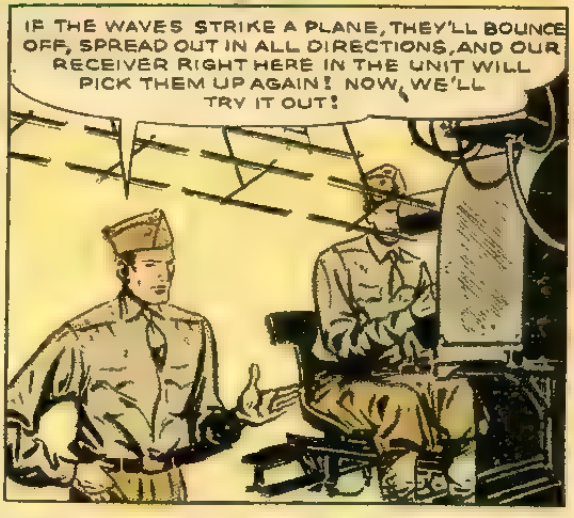


THE SOUND WAVES BOUNCE OFF THE CANYON WALL AND CARRY BACK TO THE SENDER. SINCE SOUND TRAVELS 1,087 FEET PER SECOND, IT IS POSSIBLE TO DETERMINE THE DISTANCE BETWEEN THE PERSON AND THE CANYON WALL BY TIMING THE ECHO

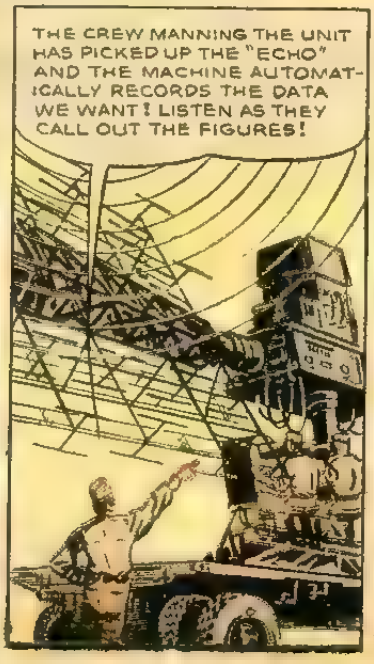
THIS IS A DIAGRAM OF A TYPICAL LAND-BASED RADAR UNIT, SHOWING THE MAIN PARTS.




THE TRANSMITTER SENDS OUT SHORT BURSTS OF RADIO WAVES. BY TURNING THE ANTENNA IN DIFFERENT DIRECTIONS, WE CAN "COVER" THE SKY! WE CALL THIS "SCANNING" THE SKY.


IF THE WAVES STRIKE A PLANE, THEY'LL BOUNCE OFF, SPREAD OUT IN ALL DIRECTIONS, AND OUR RECEIVER RIGHT HERE IN THE UNIT WILL PICK THEM UP AGAIN! NOW, WE'LL TRY IT OUT!

EIGHT MILES AWAY ··· THE RADIO WAVES - TRAVELING WITH THE SPEED OF LIGHT - (186,000 MILES PER SECOND) STRIKE A PLANE (INVISIBLE TO THE RADAR CREW) AND START TO BOUNCE BACK!


THE CREW MANNING THE UNIT HAS PICKED UP THE "ECHO" AND THE MACHINE AUTOMATICALLY RECORDS THE DATA WE WANT! LISTEN AS THEY CALL OUT THE FIGURES!

There are several different types of radar equipment, but all types use the cathode ray tube. This tube is the heart and soul of many electronic devises.

This radar unit is installed on a transport plane

The small, round, luminous screen is, in reality, a cathode ray tube! It "transforms" the sound wave echoes into visible form, "painting" a picture or map on the screen for us to look at!

In flying through fog or "soup" the antenna beneath the plane revolves slowly, as we send out radio pulses that strike the ground below in a wide circle!

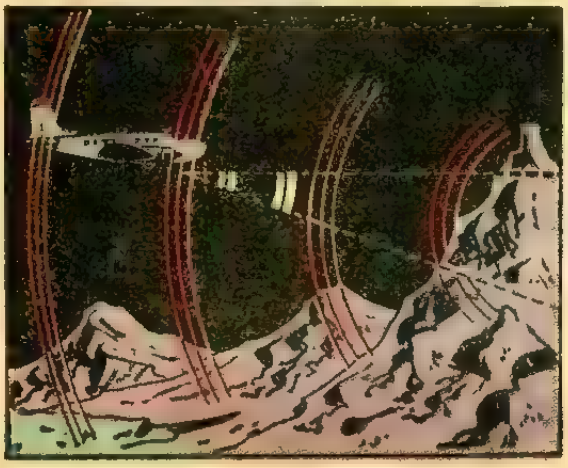
As our receiver picks up the waves bouncing back from the earth, the cathode tube transforms them into a map of the region. The straight line on the screen is a "scanner beam" which is synchronized and rotates with the rotating antenna beneath our ship!

The dot in the exact center of the screen represents the position of the plane. Range is calculated by the distance of the pips or blobs (which indicate buildings, rivers, mountains, etc.) from the center dot. The radar operator now has a luminous map of the ground below!

IN PEACETIME, RADAR WILL BE USED ALMOST EXCLUSIVELY TO NAVIGATE PLANES AND SHIPS SAFELY THROUGH DARKNESS OR FOG. HERE IS HOW IT IS DONE
THIS SOUP IS SO THICK I CAN'T SEE ANYTHING MORE THAN A FEW FEET IN FRONT OF US!

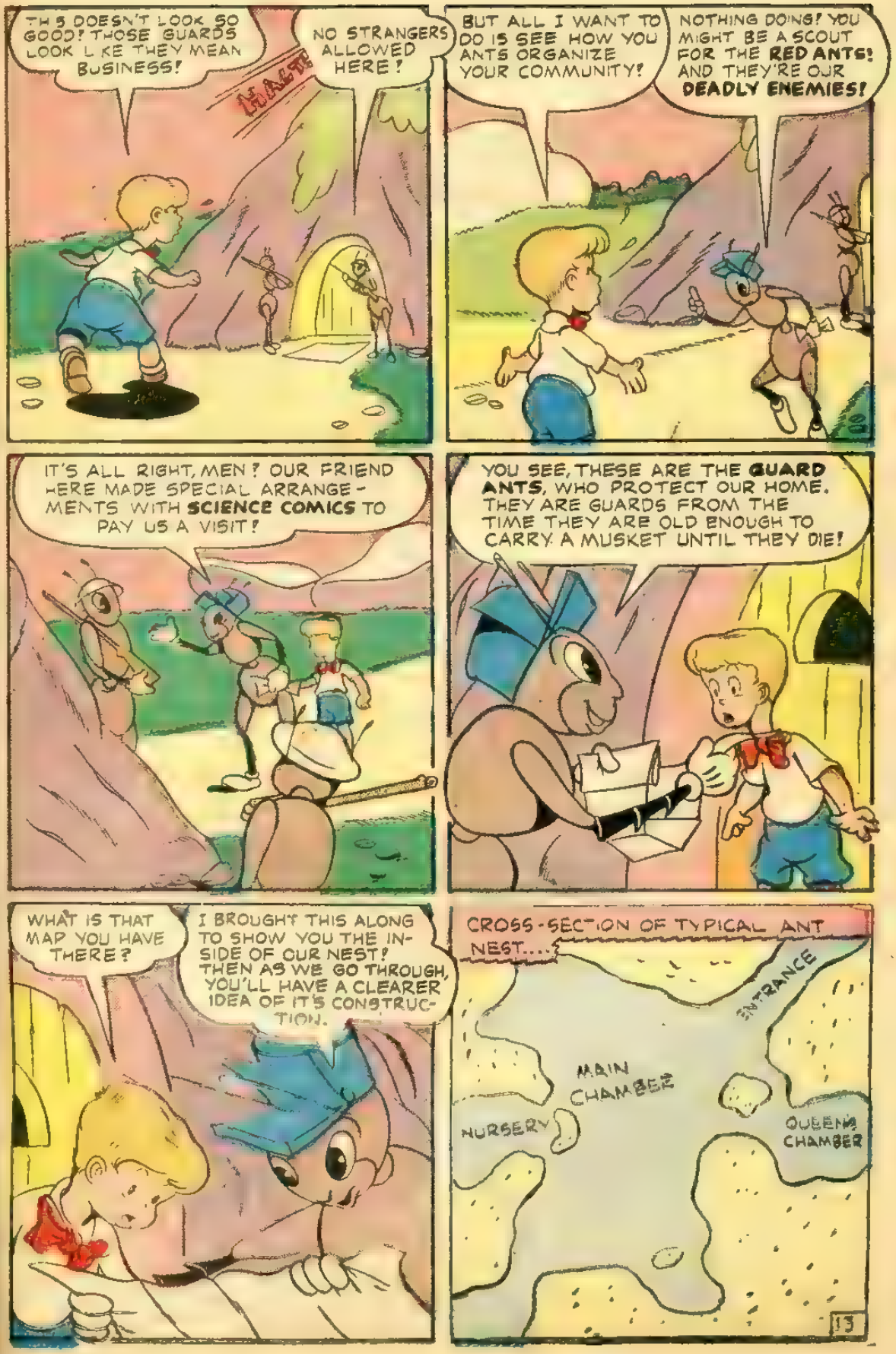
THE PLANE'S RADAR UNIT SENDS OUT SHORT BURSTS OF RADIO WAVES WHICH STRIKE THE MOUNTAIN RANGE DEAD AHEAD OF THE ONCOMING SHIP!

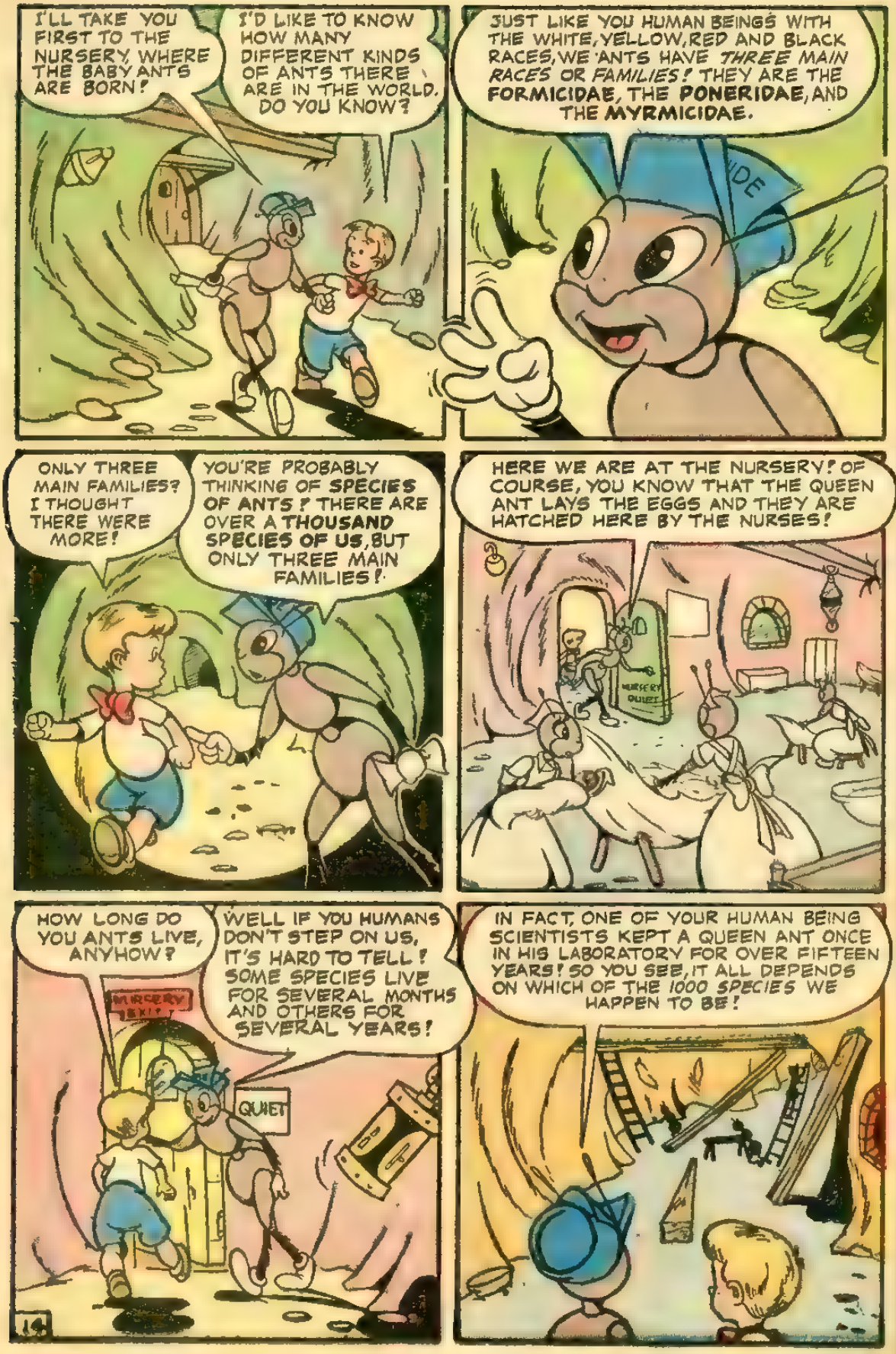
THE WAVES RETURN TO THE PLANE - WHICH IS SENDING OUT ANOTHER SHORT BURST - AND THE "BLOB" REPRESENTING THE MOUNTAIN IS RECORDED ON THE SCREEN ON THE SET!

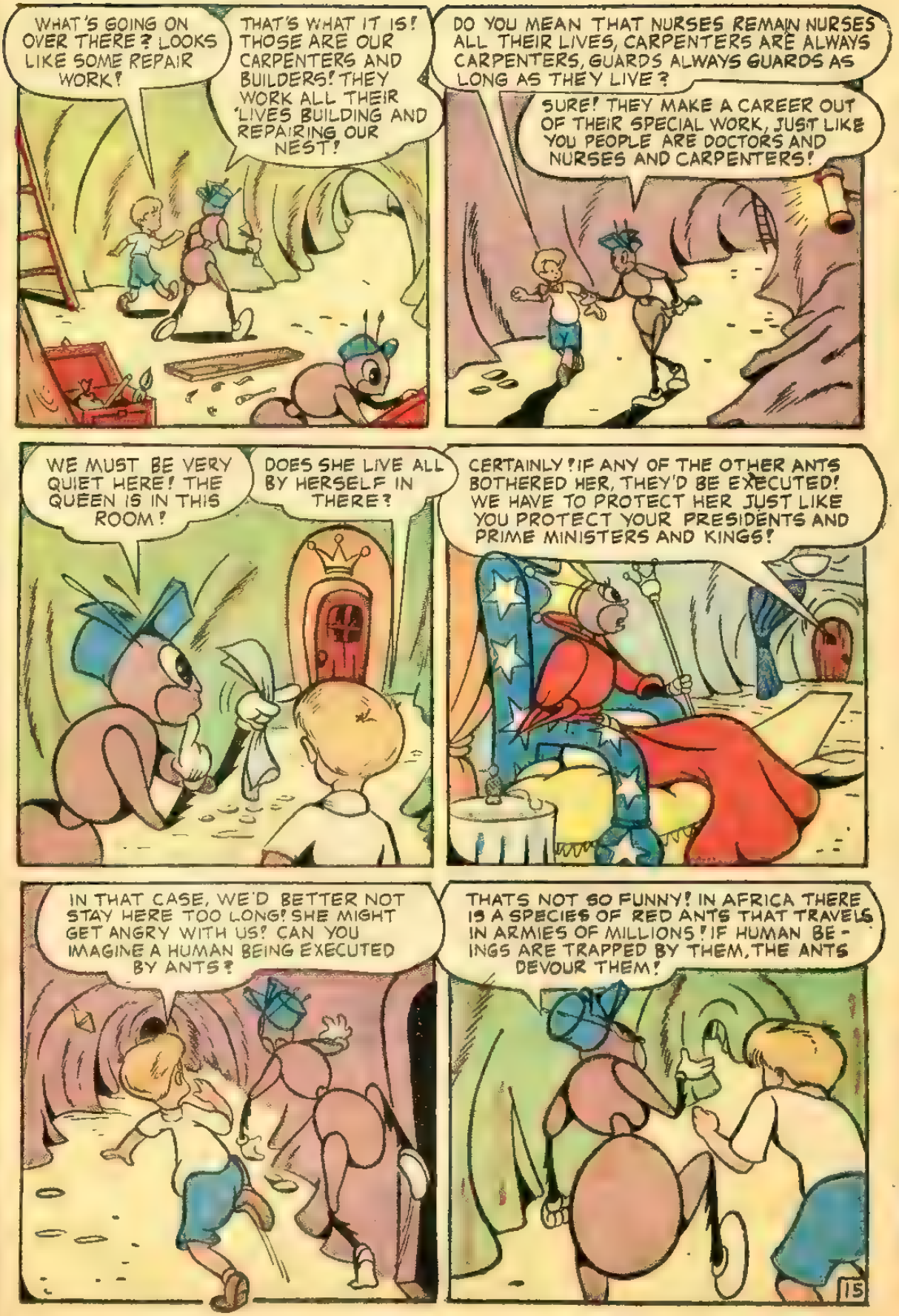


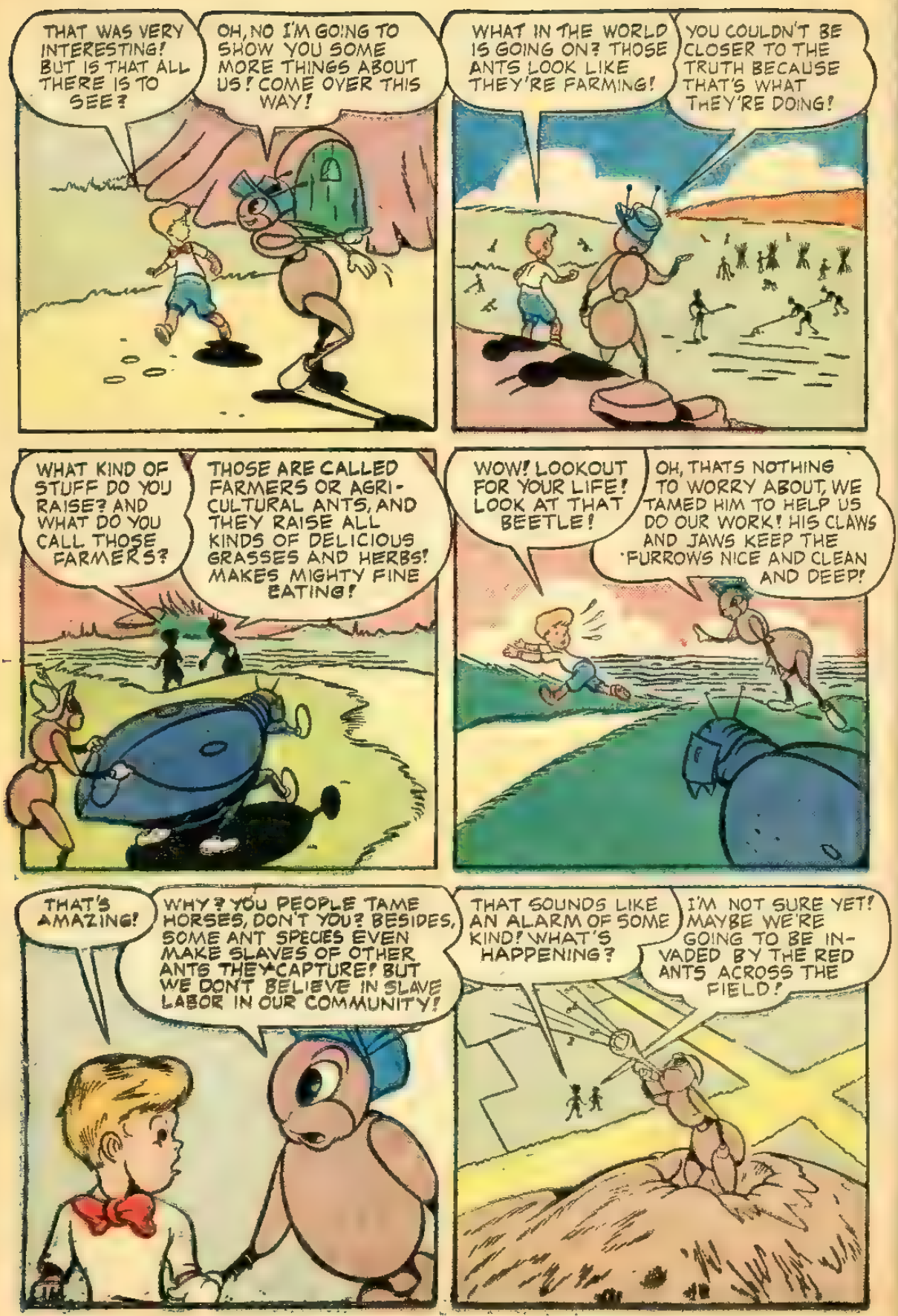
WARNED OF THE MOUNTAIN PEAK, THE PLANE CHANGES COURSE AND CLIMBS TO AVOID A COLLISION! THUS, RADAR - WHICH WAS USED DURING THE WAR TO BOMB OBSCURED ENEMY TARGETS - IS NOW AN INVALUABLE AID IN THE SAVING OF HUMAN LIVES!

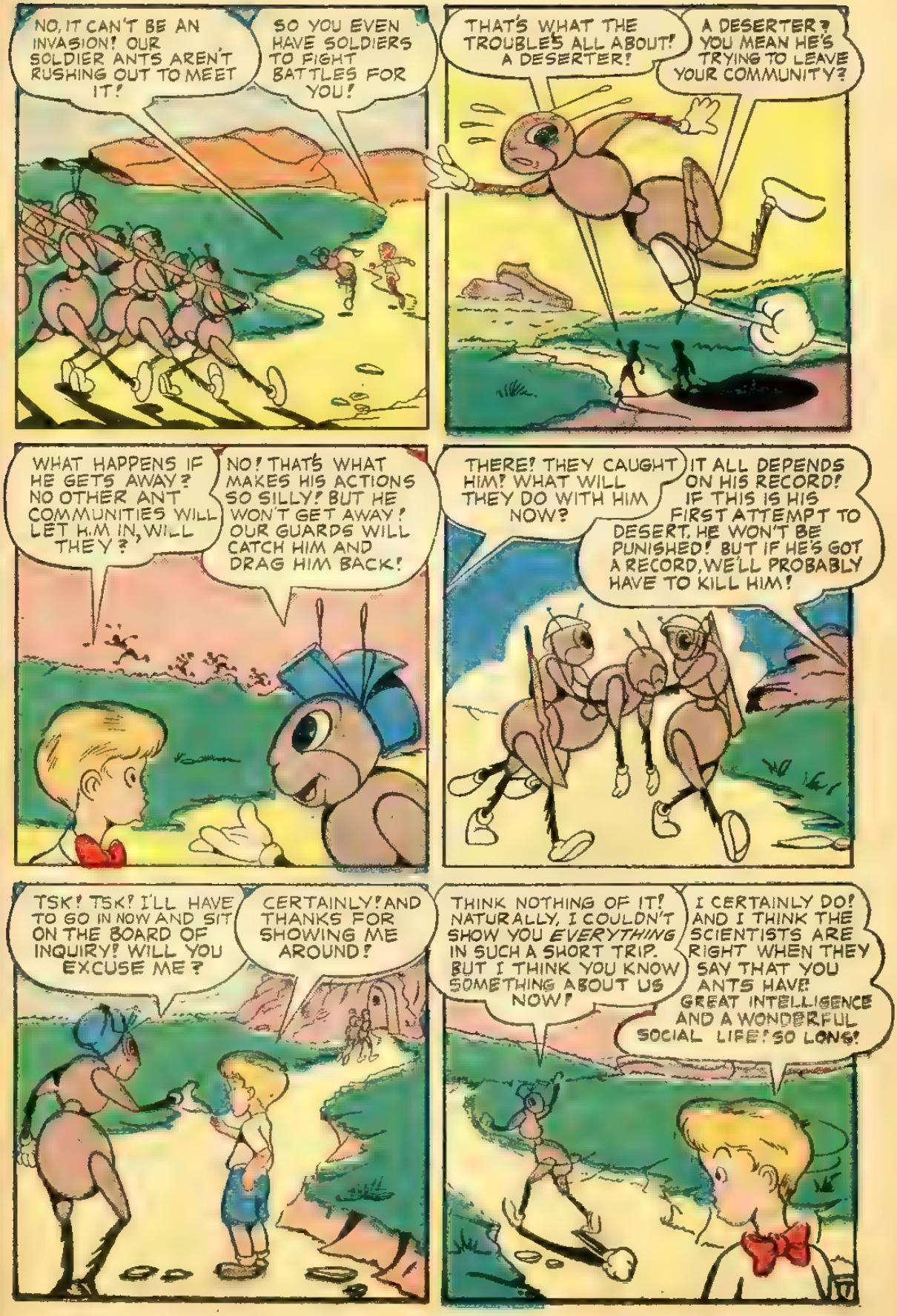
ANT CIVILIZATION
ALTHOUGH THE ANTHROPOID APES ARE NEAREST TO HUMAN BEINGS IN BODILY STRUCTURE, THE ANTS ARE PROBABLY NEXT TO HUMAN BEINGS IN THE SCALE OF INTELLIGENCE! FOR A TOUR THROUGH A TYPICAL ANT COMMUNITY, LET US IMAGINE THAT IN SOME MAGIC WAY YOU ARE REDUCED IN SIZE TO ABOUT FIVE-SIXTEENTHS OF AN INCH IN HEIGHT. (OR TO THE SIZE OF AN AVERAGE ANT.) AND SINCE MAGIC POWERS ARE INVOLVED, LET US SUPPOSE, TOO, THAT THE ANTS ARE DRESSED LIKE HUMAN BEINGS AND CAN SPEAK OUR LANGUAGE! HERE'S WHAT WE WOULD SEE!


THIS DOESN'T LOOK SO GOOD! THOSE GUARDS LOOK LIKE THEY MEAN BUSINESS!
HALT!
NO STRANGERS ALLOWED HERE!
BUT ALL I WANT TO DO IS SEE HOW YOU ANTS ORGANIZE YOUR COMMUNITY!
NOTHING DOING! YOU MIGHT BE A SCOUT FOR THE RED ANTS! AND THEY'RE OUR DEADLY ENEMIES!
IT'S ALL RIGHT, MEN! OUR FRIEND HERE MADE SPECIAL ARRANGEMENTS WITH SCIENCE COMICS TO PAY US A VISIT!
YOU SEE, THESE ARE THE GUARD ANTS, WHO PROTECT OUR HOME. THEY ARE GUARDS FROM THE TIME THEY ARE OLD ENOUGH TO CARRY A MUSKET UNTIL THEY DIE!
WHAT IS THAT MAP YOU HAVE THERE?
I BROUGHT THIS ALONG TO SHOW YOU THE INSIDE OF OUR NEST! THEN AS WE GO THROUGH, YOU'LL HAVE A CLEARER IDEA OF IT'S CONSTRUCTION.
CROSS-SECTION OF TYPICAL ANT NEST....
ENTRANCE
MAIN CHAMBER
NURSERY
QUEEN'S CHAMBER
13


I'LL TAKE YOU FIRST TO THE NURSERY, WHERE THE BABY ANTS ARE BORN!
I'D LIKE TO KNOW HOW MANY DIFFERENT KINDS OF ANTS THERE ARE IN THE WORLD. DO YOU KNOW?
JUST LIKE YOU HUMAN BEINGS WITH THE WHITE, YELLOW, RED AND BLACK RACES, WE ANTS HAVE *THREE MAIN RACES* OR *FAMILIES!* THEY ARE THE **FORMICIDAE**, THE **PONERIDAE**, AND THE **MYRMICIDAE**.
ONLY THREE MAIN FAMILIES? I THOUGHT THERE WERE MORE!
YOU'RE PROBABLY THINKING OF **SPECIES OF ANTS!** THERE ARE OVER A **THOUSAND SPECIES OF US**, BUT ONLY THREE MAIN FAMILIES!
HERE WE ARE AT THE NURSERY! OF COURSE, YOU KNOW THAT THE QUEEN ANT LAYS THE EGGS AND THEY ARE HATCHED HERE BY THE NURSES!
NURSERY QUIET
HOW LONG DO YOU ANTS LIVE, ANYHOW?
WELL IF YOU HUMANS DON'T STEP ON US, IT'S HARD TO TELL! SOME SPECIES LIVE FOR SEVERAL MONTHS AND OTHERS FOR SEVERAL YEARS!
NURSERY
QUIET
IN FACT, ONE OF YOUR HUMAN BEING SCIENTISTS KEPT A QUEEN ANT ONCE IN HIS LABORATORY FOR OVER FIFTEEN YEARS! SO YOU SEE, IT ALL DEPENDS ON WHICH OF THE *1000 SPECIES* WE HAPPEN TO BE!
16


WHAT'S GOING ON OVER THERE? LOOKS LIKE SOME REPAIR WORK!
THAT'S WHAT IT IS! THOSE ARE OUR CARPENTERS AND BUILDERS! THEY WORK ALL THEIR LIVES BUILDING AND REPAIRING OUR NEST!
DO YOU MEAN THAT NURSES REMAIN NURSES ALL THEIR LIVES, CARPENTERS ARE ALWAYS CARPENTERS, GUARDS ALWAYS GUARDS AS LONG AS THEY LIVE?
SURE! THEY MAKE A CAREER OUT OF THEIR SPECIAL WORK, JUST LIKE YOU PEOPLE ARE DOCTORS AND NURSES AND CARPENTERS!
WE MUST BE VERY QUIET HERE! THE QUEEN IS IN THIS ROOM!
DOES SHE LIVE ALL BY HERSELF IN THERE?
CERTAINLY! IF ANY OF THE OTHER ANTS BOTHERED HER, THEY'D BE EXECUTED! WE HAVE TO PROTECT HER JUST LIKE YOU PROTECT YOUR PRESIDENTS AND PRIME MINISTERS AND KINGS!
IN THAT CASE, WE'D BETTER NOT STAY HERE TOO LONG! SHE MIGHT GET ANGRY WITH US! CAN YOU IMAGINE A HUMAN BEING EXECUTED BY ANTS?
THATS NOT SO FUNNY! IN AFRICA THERE IS A SPECIES OF RED ANTS THAT TRAVELS IN ARMIES OF MILLIONS! IF HUMAN BE-INGS ARE TRAPPED BY THEM, THE ANTS DEVOUR THEM!


THAT WAS VERY INTERESTING! BUT IS THAT ALL THERE IS TO SEE?
OH, NO I'M GOING TO SHOW YOU SOME MORE THINGS ABOUT US! COME OVER THIS WAY!
WHAT IN THE WORLD IS GOING ON? THOSE ANTS LOOK LIKE THEY'RE FARMING!
YOU COULDN'T BE CLOSER TO THE TRUTH BECAUSE THAT'S WHAT THEY'RE DOING!
WHAT KIND OF STUFF DO YOU RAISE? AND WHAT DO YOU CALL THOSE FARMERS?
THOSE ARE CALLED FARMERS OR AGRICULTURAL ANTS, AND THEY RAISE ALL KINDS OF DELICIOUS GRASSES AND HERBS! MAKES MIGHTY FINE EATING!
WOW! LOOKOUT FOR YOUR LIFE! LOOK AT THAT BEETLE!
OH, THATS NOTHING TO WORRY ABOUT, WE TAMED HIM TO HELP US DO OUR WORK! HIS CLAWS AND JAWS KEEP THE FURROWS NICE AND CLEAN AND DEEP!
THAT'S AMAZING!
WHY? YOU PEOPLE TAME HORSES, DON'T YOU? BESIDES, SOME ANT SPECIES EVEN MAKE SLAVES OF OTHER ANTS THEY CAPTURE! BUT WE DON'T BELIEVE IN SLAVE LABOR IN OUR COMMUNITY!
THAT SOUNDS LIKE AN ALARM OF SOME KIND! WHAT'S HAPPENING?
I'M NOT SURE YET! MAYBE WE'RE GOING TO BE INVADED BY THE RED ANTS ACROSS THE FIELD!


NO, IT CAN'T BE AN INVASION! OUR SOLDIER ANTS AREN'T RUSHING OUT TO MEET IT!
SO YOU EVEN HAVE SOLDIERS TO FIGHT BATTLES FOR YOU!
THAT'S WHAT THE TROUBLE'S ALL ABOUT! A DESERTER!
A DESERTER? YOU MEAN HE'S TRYING TO LEAVE YOUR COMMUNITY?
WHAT HAPPENS IF HE GETS AWAY? NO OTHER ANT COMMUNITIES WILL LET H.M. IN, WILL THEY?
NO! THAT'S WHAT MAKES HIS ACTIONS SO SILLY! BUT HE WON'T GET AWAY! OUR GUARDS WILL CATCH HIM AND DRAG HIM BACK!
THERE! THEY CAUGHT HIM! WHAT WILL THEY DO WITH HIM NOW?
IT ALL DEPENDS ON HIS RECORD! IF THIS IS HIS FIRST ATTEMPT TO DESERT, HE WON'T BE PUNISHED! BUT IF HE'S GOT A RECORD, WE'LL PROBABLY HAVE TO KILL HIM!
TSK! TSK! I'LL HAVE TO GO IN NOW AND SIT ON THE BOARD OF INQUIRY! WILL YOU EXCUSE ME?
CERTAINLY! AND THANKS FOR SHOWING ME AROUND!
THINK NOTHING OF IT! NATURALLY, I COULDN'T SHOW YOU *EVERYTHING* IN SUCH A SHORT TRIP. BUT I THINK YOU KNOW SOMETHING ABOUT US NOW!
I CERTAINLY DO! AND I THINK THE SCIENTISTS ARE RIGHT WHEN THEY SAY THAT YOU ANTS HAVE GREAT INTELLIGENCE AND A WONDERFUL SOCIAL LIFE! SO LONG!

The Age Of

By Joseph

THE development of the Allied scientists of the atomic bomb which obliterated the Japanese cities of Hiroshima and Nagasaki and hastened our victory, also opened up a host of problems for us and the world to solve if we are not to blast our civilization into eternity once and for all.

The first frenzied speculations of some of our hastier news commentators and analysts painted a fantastic and generally exaggerated picture of the era of atomic energy which we are supposed to have entered—for better or for worse. Actually, it would appear at the present time that this era has not really begun at all. The atom has been split, harnessed and put to work for us, it is true, but only for destructive purposes.

And in looking at that side of a rather gloomy picture, it is not out of reason to say that we have not harnessed the atom's energy at all until such time as we are able to keep atomic power in the form of bombs from striking at our own national safety.

According to some of the scientists who developed this bomb, it is almost a certainty that prospective enemies to our national security will—within from five to ten years—have succeeded in fathoming the secret of the atomic bomb themselves and will be capable of producing it in quantities large enough to launch a surprise attack on the United States. In this event, almost all of our major cities could be erased from the face of the earth, literally overnight!

One authority for this statement is a master of air attack: General of the Armies Henry H. Arnold, who should know what he is talking about when it comes to the use of weapons of attack from the air. Therefore, it would appear that to be entirely safe—or reasonably so—from such attack, we must somehow learn how to detonate atomic bombs in the hands of our enemies before they reach our shores.

SHOULD war break out again, it is the prediction of two of the atom bombs scientists, about 40,000,000 Americans would die in the first awful, devastating sneak attack. These men, Dr. J. R. Oppenheimer of the New Mexico laboratories of the bomb-making project, and Dr H J Curtis of the Oak Ridge (Tennessee) plant, stated this figure in testimony before a Senate committee hearing

Dr. Curtis further stated: "We have been driven to the conclusion that there is only one solution of the secrecy problem; namely to turn over to an international organization the control of all aspects of atomic energy."

This, in turn, brought up a myriad of other problems and set off heated debates between those groups who were inclined to agree with the suggestions of Dr Oppenheimer and Dr. Curtis as against other factions who believe the only safe course for the peace-loving nations to take is to keep the cards explaining the atom bomb close to our vests and show them to no one at all.

It is, indeed, a perplexing problem and one that does not seem too close to a satisfactory solution in the near future.

While this controversy was proceeding apace, an announcement from The Crosby Research Foundation, one of Bing-the-Groaner's enterprises, threw another firecracker into

Atomic Energy

Blair

the general confusion. The Foundation, the announcement said, had succeeded in developing a defense against the atom bomb. The idea seemed to be that the bombs could be detected miles away from their objectives and could then be detonated before reaching those objectives. Just how this is to be accomplished was not revealed in the news dispatches and after this initial statement, no further word was forthcoming from the Foundation . . . possibly because of requests from our government to say no more about it.

Some high army officials have taken the position that the atom bomb has not materially changed the general strategy of our planning in case war should break out again. They reason that a target—to be obliterated by the bomb—must first be cleared of all enemy air opposition or the planes carrying the bombs would be wiped out before reaching their targets.

THE next step in their thinking is that once the air opposition has been done away with, there is no particular point in using the atom bomb because we could then send over huge fleets of heavy bombers to accomplish the same purpose.

The Navy bigwigs are saying essentially the same thing, for the most part. They argue that you have to get the bombs close enough to the target to make them effective. To accomplish this, say the Navy men, requires a fleet superior to the enemy fleet; a fleet capable of blasting the enemy fleet to the bottom of the sea and of destroying all air support for that fleet.

Once this is accomplished, our battlewagons can move into enemy waters, stand off shore, and pour lead into inland targets from our big guns. At the same time, fleet air armadas —with no opposition left—could take off from our carriers and bomb the enemy cities into submission whether we used atom bombs or not.

So at the moment, there is where we stand concerning the atomic bomb, and as was mentioned previously, there seems to to no immediate and definite answer one way or the other.

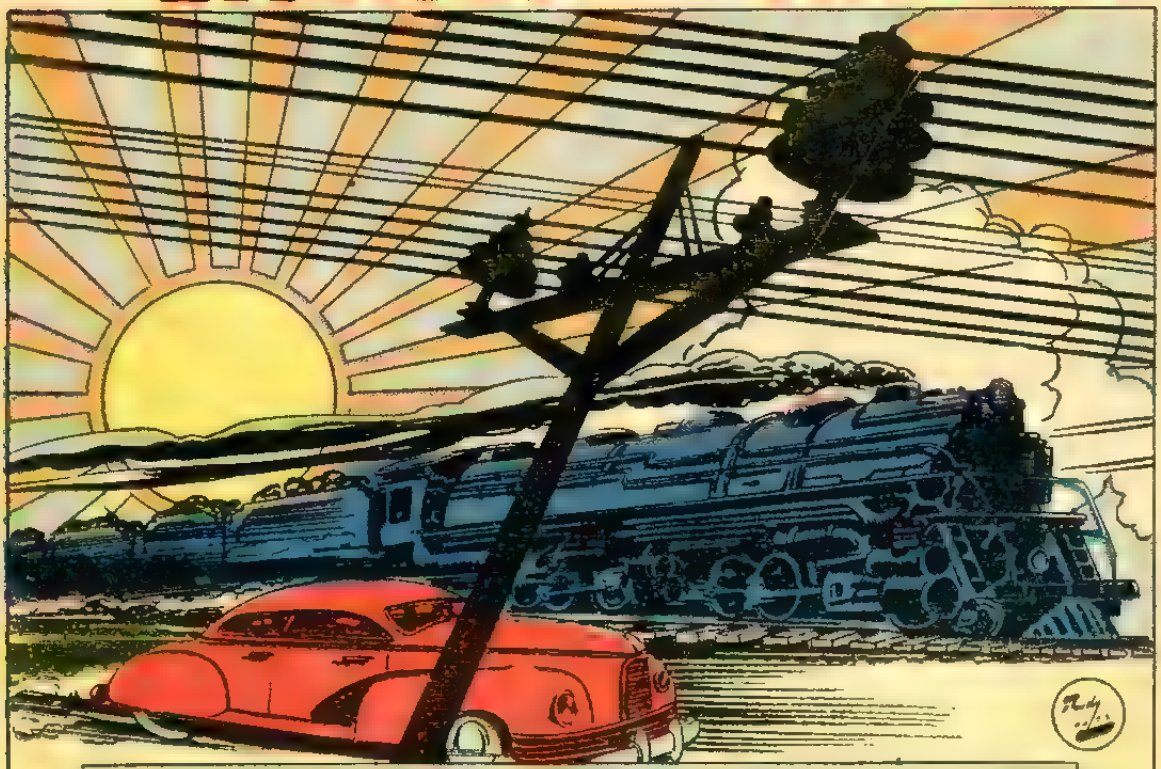
Regarding the use of atomic energy for running our factories, automobiles, ships and planes, etc., most informed observers are quick to point out that this is still all in the planning or embryonic stage.

While, in theory, the smashing of the atoms in an ordinary liquid such as a single glass of water would drive an ocean liner around the seven seas and back, science has not yet discovered how this can be done.

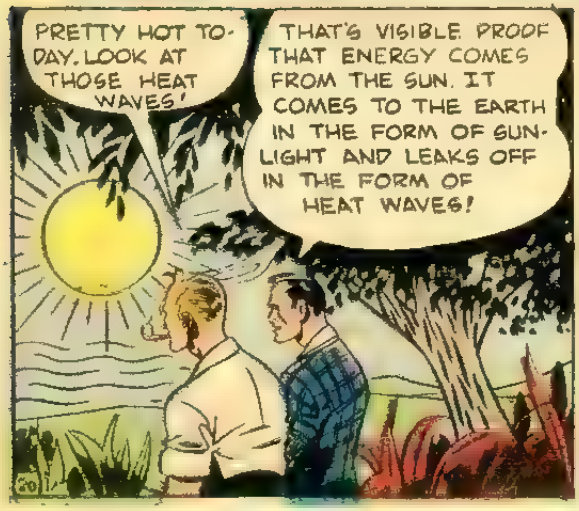
The more optimistic proponents of using atomic energy in this manner say that it could be done soon—possibly in ten years or so. On the other hand, many cautious scientists—some of whom helped develop the bomb—state flatly that the age of atomic energy is as far as fifty years away.

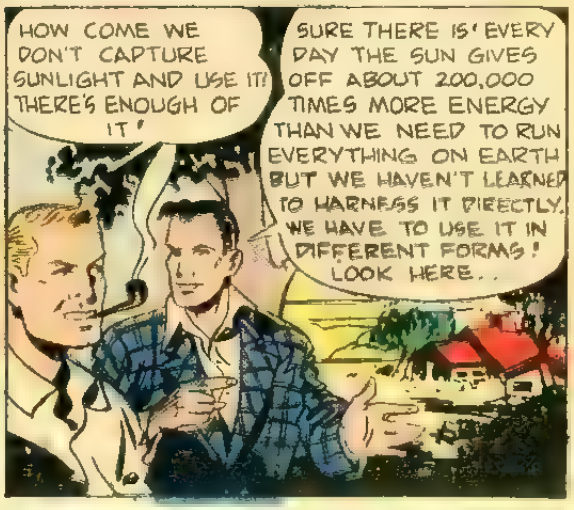
Thus, while there is a distinct possibility that other nations will succeed in harnessing Uranium 235 for use against us in bombs, there is no good reason to believe that any nation will develop atomic energy for turning dynamos or in other ways harnessing atomic power for many, many years to come.

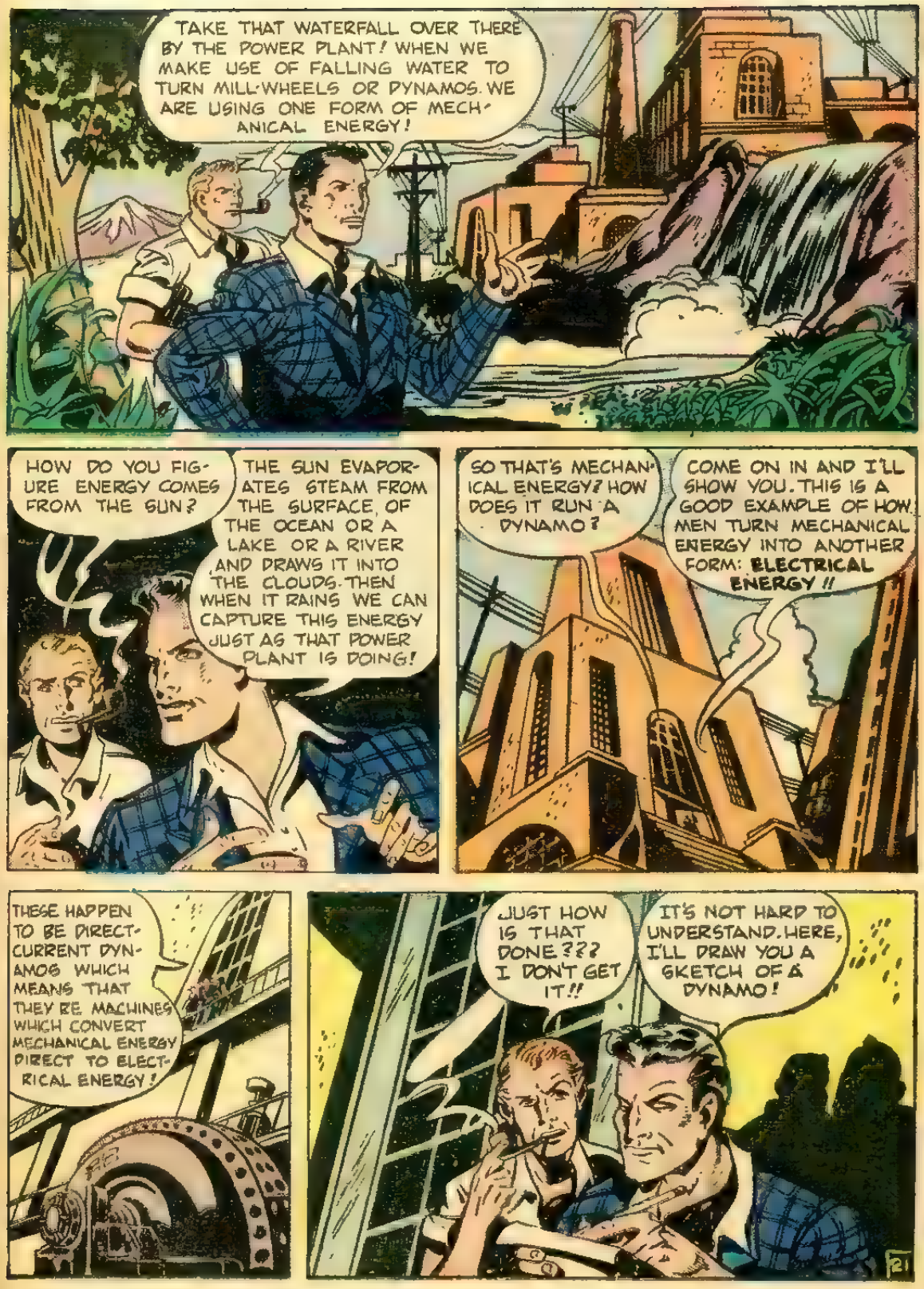
HOW ENERGY MAKES THINGS GO

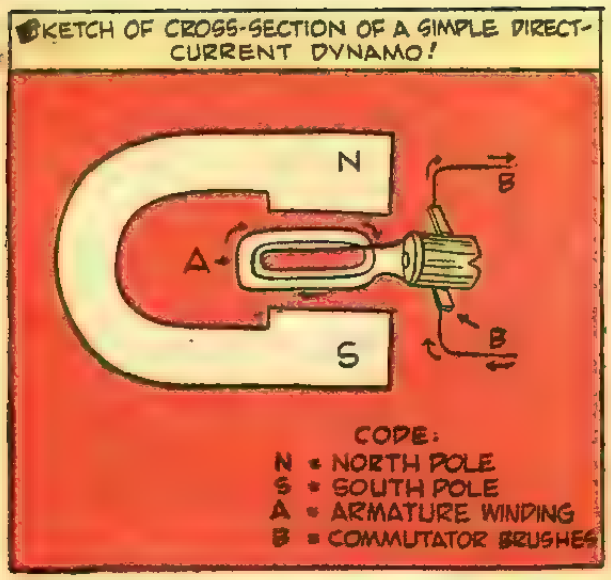


EVERYTHING THAT MOVES IN ANY MANNER AT ALL USES ENERGY. THEREFORE THERE ARE MANY KINDS OF ENERGY ON OUR EARTH. ALL ENERGY COMES ORIGINALLY FROM THE SUN, FOR IF THE SUN CEASED SHINING EVERYTHING IN OUR WORLD WOULD DIE. HERE ARE A FEW OF THE WAYS HUMAN BEINGS MAKE USE OF SOME OF THE FORMS OF ENERGY!

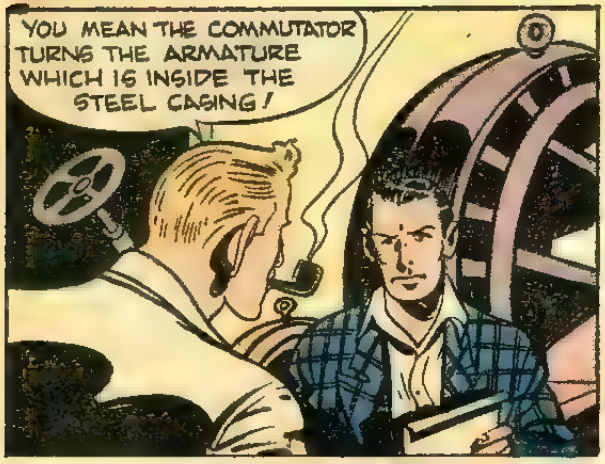

PRETTY HOT TODAY. LOOK AT THOSE HEAT WAVES!
THAT'S VISIBLE PROOF THAT ENERGY COMES FROM THE SUN. IT COMES TO THE EARTH IN THE FORM OF SUNLIGHT AND LEAKS OFF IN THE FORM OF HEAT WAVES!

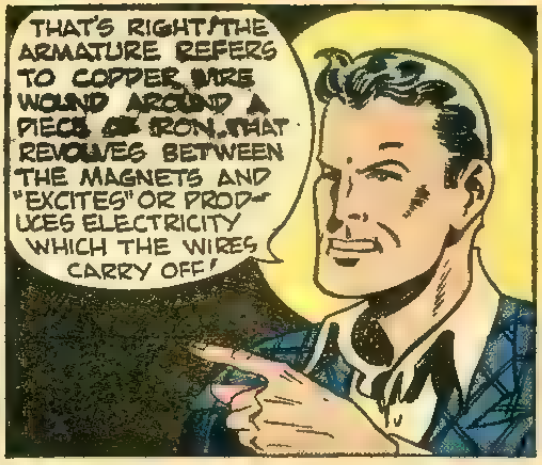

HOW COME WE DON'T CAPTURE SUNLIGHT AND USE IT! THERE'S ENOUGH OF IT!
SURE THERE IS! EVERY DAY THE SUN GIVES OFF ABOUT 200,000 TIMES MORE ENERGY THAN WE NEED TO RUN EVERYTHING ON EARTH BUT WE HAVEN'T LEARNED TO HARNESS IT DIRECTLY. WE HAVE TO USE IT IN DIFFERENT FORMS! LOOK HERE..

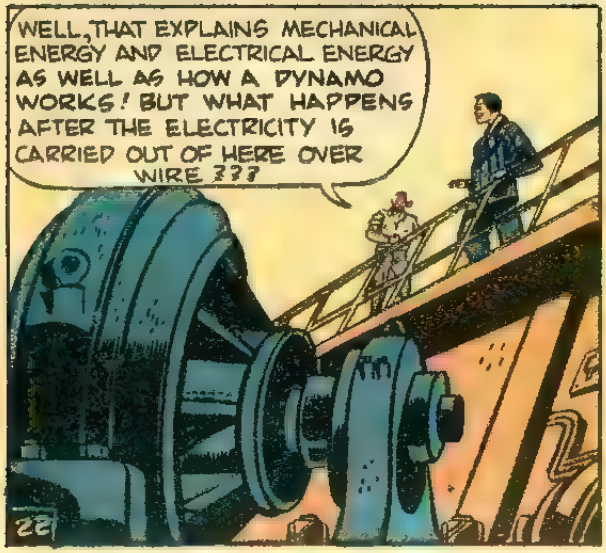

TAKE THAT WATERFALL OVER THERE BY THE POWER PLANT! WHEN WE MAKE USE OF FALLING WATER TO TURN MILL-WHEELS OR DYNAMOS. WE ARE USING ONE FORM OF MECHANICAL ENERGY!
HOW DO YOU FIGURE ENERGY COMES FROM THE SUN?
THE SUN EVAPORATES STEAM FROM THE SURFACE OF THE OCEAN OR A LAKE OR A RIVER AND DRAWS IT INTO THE CLOUDS. THEN WHEN IT RAINS WE CAN CAPTURE THIS ENERGY JUST AS THAT POWER PLANT IS DOING!
SO THAT'S MECHANICAL ENERGY? HOW DOES IT RUN A DYNAMO?
COME ON IN AND I'LL SHOW YOU. THIS IS A GOOD EXAMPLE OF HOW MEN TURN MECHANICAL ENERGY INTO ANOTHER FORM: ELECTRICAL ENERGY!!
THESE HAPPEN TO BE DIRECT-CURRENT DYNAMOS WHICH MEANS THAT THEY'RE MACHINES WHICH CONVERT MECHANICAL ENERGY DIRECT TO ELECTRICAL ENERGY!
JUST HOW IS THAT DONE??? I DON'T GET IT!!
IT'S NOT HARD TO UNDERSTAND. HERE, I'LL DRAW YOU A SKETCH OF A DYNAMO!
21


SKETCH OF CROSS-SECTION OF A SIMPLE DIRECT-CURRENT DYNAMO!
N
S
A
B
B
CODE:
N = NORTH POLE
S = SOUTH POLE
A = ARMATURE WINDING
B = COMMUTATOR BRUSHES

FINE! BUT WHAT IS A COMMUTATOR?
THAT IS WHAT THE MECHANICAL ENERGY OF THE FALLING WATER TURNS AROUND TO RUN THE DYNAMO!


YOU MEAN THE COMMUTATOR TURNS THE ARMATURE WHICH IS INSIDE THE STEEL CASING!


THAT'S RIGHT! THE ARMATURE REFERS TO COPPER WIRE WOUND AROUND A PIECE OF IRON, THAT REVOLVES BETWEEN THE MAGNETS AND "EXCITES" OR PRODUCES ELECTRICITY WHICH THE WIRES CARRY OFF!


WELL, THAT EXPLAINS MECHANICAL ENERGY AND ELECTRICAL ENERGY AS WELL AS HOW A DYNAMO WORKS! BUT WHAT HAPPENS AFTER THE ELECTRICITY IS CARRIED OUT OF HERE OVER WIRE???
22

THERE ARE THE WIRES THAT CARRY THE ELECTRICAL ENERGY INTO OUR HOMES. NOW I'LL DRIVE YOU HOME AND WE'LL SEE WHAT HAPPENS!!

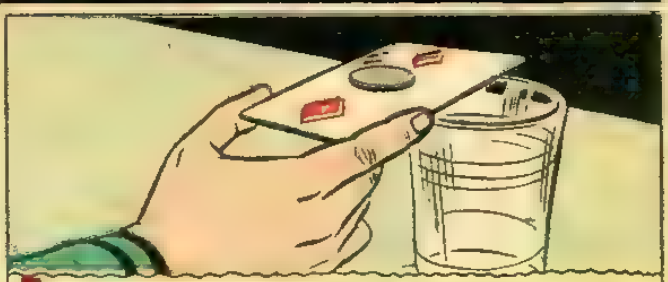
INCIDENTALLY, WHAT KIND OF ENERGY RUNS THIS CAR!?
THAT'S AN EXAMPLE OF CHEMICAL ENERGY! WHILE WE'RE DRIVING I'LL EXPLAIN IT TO YOU!!
YOU KNOW IF YOU APPLY A MATCH TO GASOLINE THERE'S GOING TO BE EITHER AN EXPLOSION OR FIRE! AND THAT'S WHAT HAPPENS IN THE ENGINE OF A CAR!
CUT-AWAY SECTION SHOWING DETAILS OF AN ENGINE CYLINDER...
MAGNETO
WATER JACKET
SPARK PLUG
PISTON
CYLINDER
GAS-AIR EXHAUST VALVES
YOU SEE, GASOLINE FROM THE TANK IS FED SLOWLY INTO THE CYLINDER OF THE ENGINE. THERE THE SPARK FROM THE SPARK PLUG IGNITES THE GASOLINE!
THE AIR AND BURNED GASOLINE VAPORS PUSH THE PISTONS DOWN INSIDE THE CYLINDERS AND THE PISTONS PUSH SOME GEARS AND THE GEARS TURN THE WHEELS!
WELL, WE'VE COVERED CHEMICAL ENERGY, I GUESS! WHAT NEXT?
NOW I'LL SHOW YOU WHAT THE ELECTRICAL ENERGY FROM THE POWER-HOUSE DOES WHEN WIRED INTO A HOUSE!

ALL WE HAVE TO DO TO TURN ELECTRICAL ENERGY INTO SOMETHING ELSE IS TO SNAP THE SWITCH ON THIS LAMP!!
WHAT HAVE WE GOT NOW?
WE HAVE TWO FORMS OF ENERGY NOW! FIRST THE ELECTRICAL ENERGY FLOWING THROUGH THE FILAMENT OF THE BULB IS CONVERTED INTO HEAT ENERGY!
THE FILAMENTS OR WIRES IN THE BULB ARE SO SENSITIVE THAT THEY BREAK INTO "FLAME" IMMEDIATELY! IN OTHER WORDS THE BULB "LIGHTS UP"!
I GET IT! THAT CHANGES THE HEAT ENERGY INTO LIGHT ENERGY!
RIGHT YOU ARE! AND REMEMBER IT ALL STARTED WITH SIMPLE MECHANICAL ENERGY OF THE WATERFALL!
AND I GUESS THAT WAS STARTED BY THE SUN DRAWING WATER INTO THE CLOUDS! I GUESS THAT PROVES THAT ALL ENERGY COMES FROM THE SUN AFTER ALL!
IN ADDITION TO MECHANICAL, ELECTRICAL CHEMICAL, HEAT, AND LIGHT ENERGY, THERE ARE MANY OTHER FORMS. SCIENTISTS ARE CONSTANTLY LEARNING TO CHANGE ENERGY FROM ONE FORM TO ANOTHER. THE MOST RECENT EXAMPLE WAS THE ATOMIC BOMB (SEE SCIENCE COMICS NO. 1) WHICH WAS THE FIRST SUCCESSFUL USE OF ATOMIC ENERGY!

HOME SCIENCE

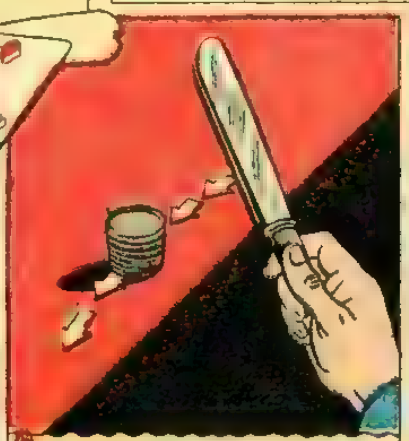
EXPERIMENTS WITH INERTIA

EVERYTHING IN THE WORLD HAS A TENDENCY TO (1) REMAIN MOTIONLESS OR (2) IF IT HAPPENS TO BE MOVING, TO KEEP ON MOVING. TO SET A MOTIONLESS OBJECT MOVING FORCE MUST BE APPLIED IN SOME WAY. TO STOP A MOVING OBJECT WE MUST ALSO USE FORCE. THIS TENDENCY OF ALL THINGS TO KEEP ON IN A STATE OF REST OR MOTION IS CALLED ***INERTIA***. HERE ARE SOME EXPERIMENTS YOU CAN DO TO PROVE THE POINT.

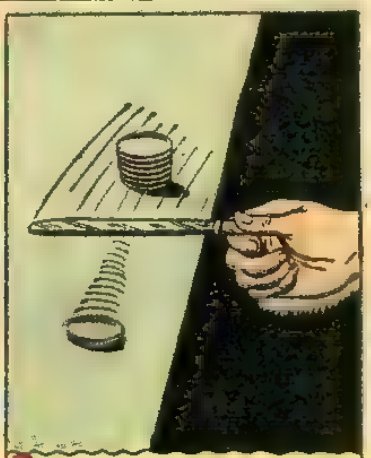


PLACE A PLAYING CARD ON A GLASS. ON TOP OF THE PLAYING CARD PUT A SMALL COIN AS CLOSE TO THE CENTER OF THE CARD AS POSSIBLE....

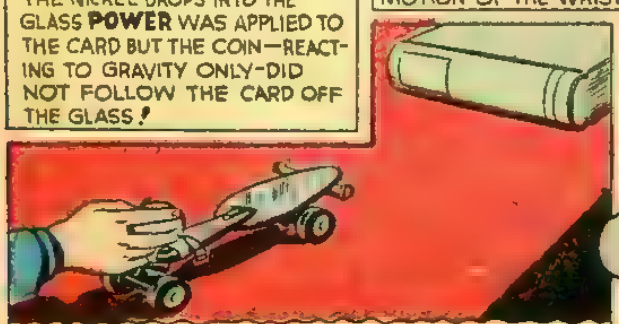
NOW, WITH YOUR FINGER, FLICK THE CARD OFF THE GLASS BY STRIKING THE EDGE OF THE CARD, THE CARD FLIES OFF, BUT THE NICKEL DROPS INTO THE GLASS **POWER** WAS APPLIED TO THE CARD BUT THE COIN—REACTING TO GRAVITY ONLY—DID NOT FOLLOW THE CARD OFF THE GLASS!



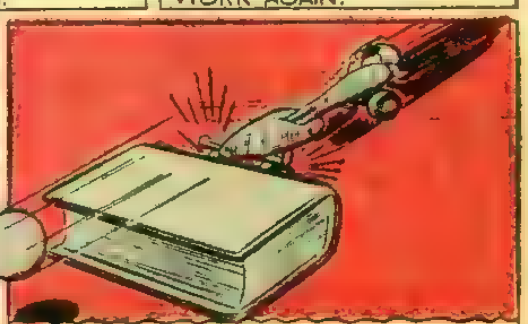
STACK SOME IDENTICAL COINS ON A TABLE, MAKING SURE THEY ARE PILED AS PERFECTLY AS POSSIBLE UPON EACH OTHER. THEN, STRIKE THE BOTTOM ONE WITH THE CUTTING EDGE OF A COMMON TABLE KNIFE, USING A FAST, SIDEWISE MOTION OF THE WRIST.



THE BOTTOM COIN WILL SCOOT OUT FROM UNDERNEATH THE PILE AND THE REST OF THE COINS WILL REMAIN PERFECTLY STACKED, ***INERTIA*** IS AT WORK AGAIN.



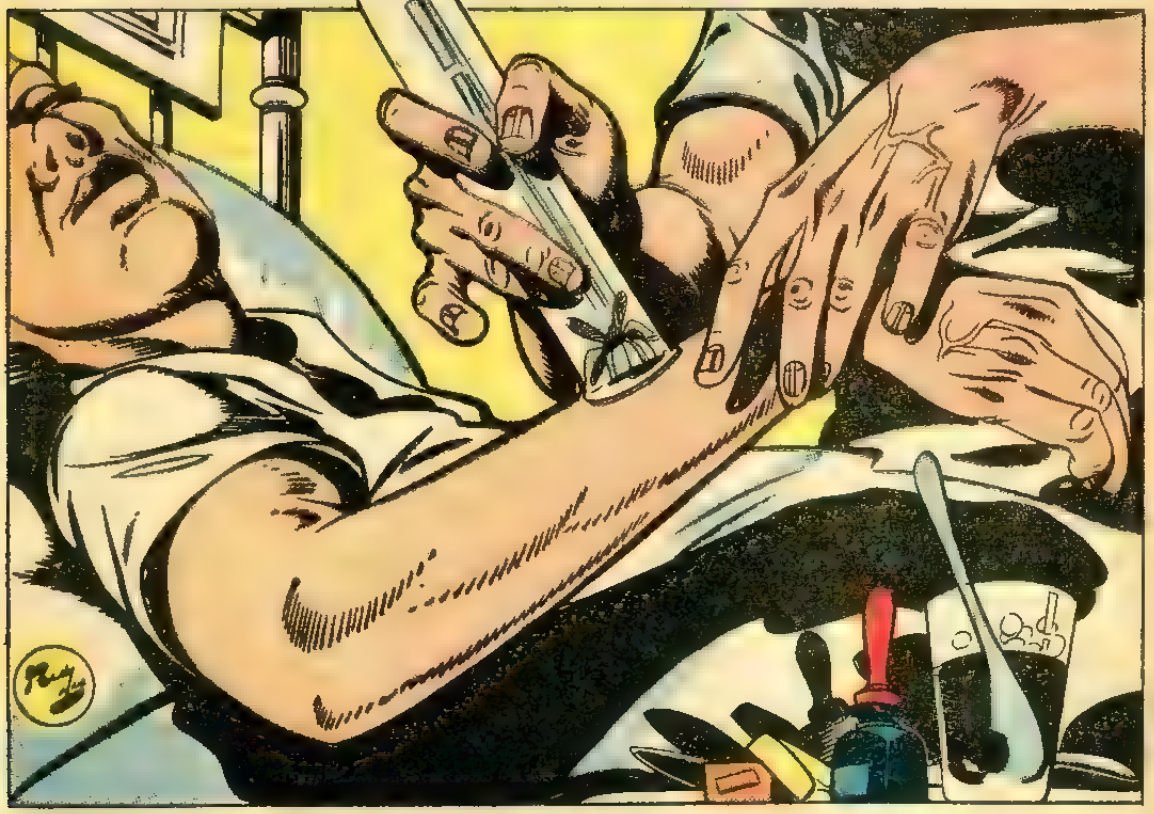
NOW PLACE A BALL ON A ROLLAR SKATE SO THAT THE HEEL REST KEEPS IT FROM ROLLING OFF WHEN YOU PUSH THE SKATE, (REMEMBER! POWER APPLIED TO THE SKATE ALONE WILL LEAVE THE BALL BEHIND.) NOW, PUSH THE SKATE AND THE BALL TOWARDS A SOLID OBJECT ON THE FLOOR.



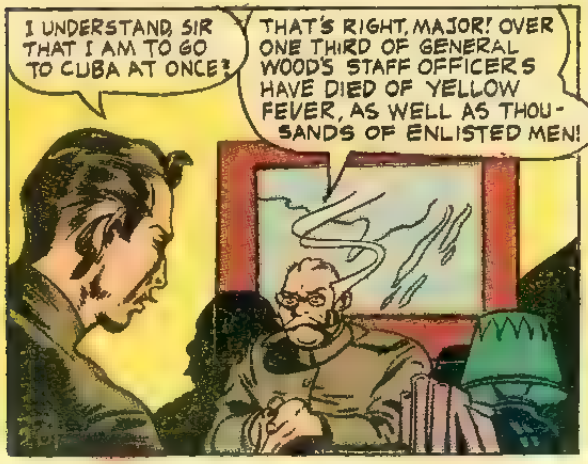
WHEN THE SKATE STRIKES THE SOLID OBJECT, THE POWER OF THAT OBJECT CAUSES IT TO STOP, BUT THE BALL—IMBUED WITH THE ENERGY OF MOTION—KEEPS ON GOING BECAUSE NO POWER WAS APPLIED TO IT TO STOP IT. ***INERTIA*** KEEPS IT MOVING.

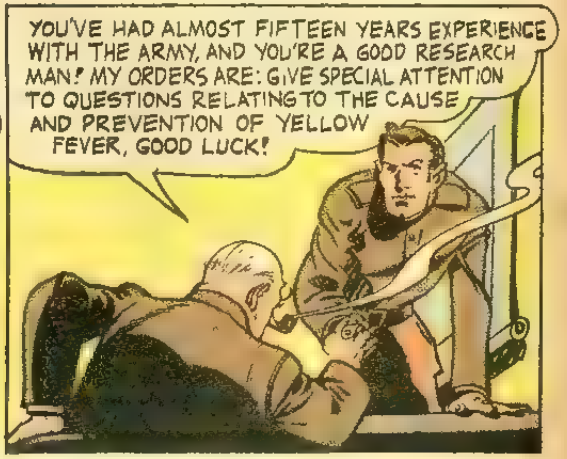
WALTER REED

THE MAN WHO CONQUERED YELLOW FEVER



THE YEAR WAS 1900 AND AMERICA HAD JUST WON HER WAR AGAINST SPAIN. BUT AMERICAN TROOPS IN CUBA WERE LOSING MORE OF THEIR MEN TO THE DREADED YELLOW FEVER THAN THEY HAD LOST TO SPANISH BULLETS! SOMETHING HAD TO BE DONE BY SOMEBODY! ENTER NOW: MAJOR WALTER REED, U.S.A.


I UNDERSTAND SIR THAT I AM TO GO TO CUBA AT ONCE?
THAT'S RIGHT, MAJOR! OVER ONE THIRD OF GENERAL WOOD'S STAFF OFFICERS HAVE DIED OF YELLOW FEVER, AS WELL AS THOUSANDS OF ENLISTED MEN!


YOU'VE HAD ALMOST FIFTEEN YEARS EXPERIENCE WITH THE ARMY, AND YOU'RE A GOOD RESEARCH MAN! MY ORDERS ARE: GIVE SPECIAL ATTENTION TO QUESTIONS RELATING TO THE CAUSE AND PREVENTION OF YELLOW FEVER, GOOD LUCK!

ARRIVING IN CUBA, REED SET UP A YELLOW FEVER COMMISSION.....
CAPTAIN CARROLL, WITH YOU, JESSE LAZEAR AND ARISTEDES AGRAMONTE I THINK WE MIGHT FIND SOMETHING INTERESTING ABOUT THIS "YELLOW JACK"
JUST WHAT HAVE YOU DISCOVERED ABOUT THIS DISEASE? IS THERE ANY PATTERN TO THE WAY IT STRIKES?
STEP OVER HERE, SIR! I'LL SHOW YOU A MAP ON WHICH WE'VE PLOTTED SOME CASES!
THIS IS A SECTION OF QUEMADOS! FIRST IT STRUCK ON REAL STREET THEN JUMPED AROUND THE CORNER TO GENERAL LEE STREET!
ISN'T IT POSSIBLE THAT THOSE FAMILIES ARE FRIENDLY? PERHAPS THEY GOT IT FROM ONE ANOTHER!
THAT WOULD MAKE THE MYSTERY LESS BAFFLING BUT IT ISN'T THE CASE! THESE FAMILIES DON'T KNOW EACH OTHER AT ALL!
FURTHERMORE WE HAVE BEEN ABLE TO FIND NO MICROBES IN ANY BLOOD SAMPLES OF THE VICTIMS! SEE FOR YOURSELF!!
THERE IS A DOCTOR CARLOS FINLAY OF HABANA WHO CLAIMS THAT THE DISEASE IS CAUSED BY A MOSQUITO. BUT HE HAS NO PROOF, IT'S MERELY A THEORY!!
LET'S GO HAVE A TALK WITH DR. FINLAY! WE CAN'T AFFORD TO MISS ANY CLUES, NO MATTER HOW HAIR-BRAINED THEY MIGHT SEEM TO BE!
27

THE COMMISSION CALLED ON THE "THEORIZING OLD FOOL" AS PEOPLE CALLED DR. FINLAY!
GENTLEMEN, I HAVE GIVEN YOU MY REASONS FOR BELIEVING THAT YELLOW FEVER IS CAUSED BY MOSQUITOES! I SHALL ALSO GIVE YOU SOMETHING ELSE!
HERE ARE SOME SMALL, BLACK EGGS SHAPED LIKE CIGARS. GENTLEMEN, THE EGGS OF THE MURDEROUS MOSQUITOES ARE BEFORE YOU
LAZEAR, TAKE CHARGE OF THOSE... HATCH THEM AND LET'S PUT DOCTOR FINLAY'S THEORY TO A PRACTICAL TEST!
SEVERAL WEEKS LATER
LAZEAR, YOUR MOSQUITOES ARE FULL GROWN! IT'S TIME TO PUT THEM TO THE TEST!
BUT SIR... ON WHOM SHALL WE EXPERIMENT? EVERYBODY KNOWS YOU CAN'T GIVE YELLOW FEVER TO ANIMALS. HUMAN BEINGS WILL HAVE TO BE OUR GUINEA PIGS!!
I KNOW IT'S RISKY! OUR RECORDS SHOW THAT IN SOME EPIDEMICS, EIGHTY-FIVE OUT OF A HUNDRED MEN DIE! ALMOST NEVER DO LESS THAN TWENTY DIE OF A HUNDRED CASES! IT MUST BE DONE!
I SHOULD LIKE TO BE THE FIRST VOLUNTEER, MAJOR!!
THANKS, AGROMONTE! BUT YOU HAVE HAD THE DISEASE ONCE AND RECOVERED! YOU ARE IMMUNE!
YOU CAN COUNT ON ME, SIR!
I AM READY TO TAKE THE BITE!
THANK YOU GENTLEMEN. IF WE TAKE THE RISKS FIRST WE SHALL SET AN EXAMPLE FOR OTHERS TO FOLLOW!

ABOUT THIS TIME MAJOR REED WAS RE CALLED TO WASHINGTON TEMPORARILY AND HE LEFT INSTRUCTIONS WITH LAZEAR AND CARROLL TO CARRY OUT THEIR EXPERIMENTS IN SELFLESS, SINCE THEY DID NOT HAVE PERMISSION TO DO SO FROM HIGH MILITARY AUTHORITIES!

LAZEAR TOOK HIS MOSQUITOES TO THE HOSPITAL AT LAS ANIMAS...

AND WHILE LAZEAR'S MOSQUITOES WERE COLLECTING BLOOD FROM THE VICTIMS...

AH! A STRAY MOSQUITO! LET HIM BITE ME! HE ISN'T THE TYPE THAT CARRIES YELLOW FEVER, ANYWAY!

BUT DOCTOR LAZEAR WAS WRONG! FIVE DAYS LATER HE WAS STRICKEN WITH THE YELLOW FEVER!

CARROLL, I AM DYING BUT REMEMBER... IT IS ENTIRELY POSSIBLE THAT THE STRAY MOSQUITO IN THAT WARD HAD BITTEN A PATIENT BEFORE HE BIT ME!!!

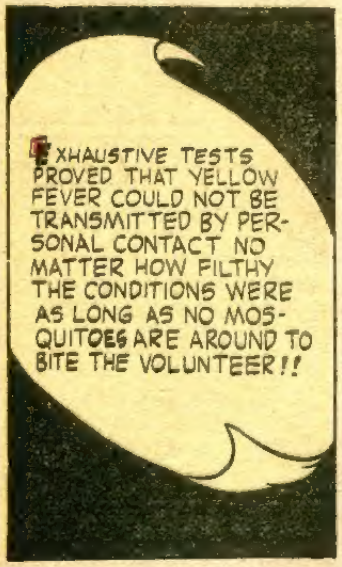
YES, LAZEAR! PERHAPS YOU'RE ON THE RIGHT TRACK!

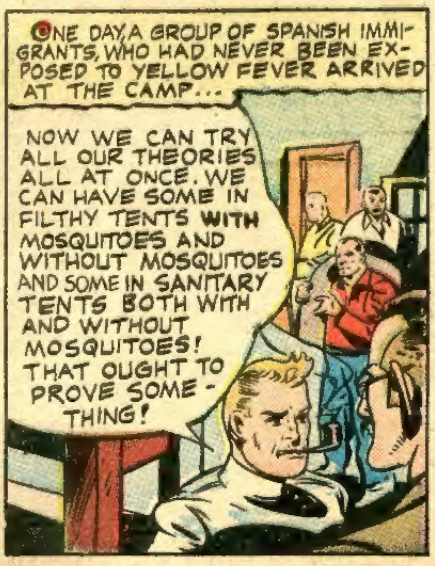
WHEN MAJOR REED COMES BACK, WE'RE GOING TO GET TO THE BOTTOM OF THIS THING! WE'LL BUILD A MODEL CAMP AND KEEP ALL EXPERIMENTAL CONDITIONS UNDER SCIENTIFIC CONTROL! WE'VE GOT TO FIND OUT ABOUT THESE MOSQUITOES ONCE AND FOR ALL!!

MAJOR REED RETURNED TO CUBA WITH PERMISSION FROM GENERAL WOOD TO ERECT AN EXPERIMENTAL STATION!
CARROLL, I THINK IT ONLY FITTING AND PROPER THAT WE NAME OUR NEW EXPERIMENTAL STATION "CAMP LAZEAR"
I'M CERTAINLY IN FAVOR OF THAT, SIR!
SIR, I'M PRIVATE KISSINGER, AND THIS IS JOHN MORAN OF OHIO! WE'VE COME TO VOLUNTEER OUR SERVICES FOR THE CAUSE OF HUMANITY! WE'RE READY TO START AT ANY TIME, SIR!!
IT'S IN THE INTERESTS OF SCIENCE TOO, SIR!! I HOPE WE SUCCEED!
I AM AUTHORIZED TO GIVE YOU TWO HUNDRED TO THREE HUNDRED DOLLARS EACH FOR THIS WORK! IS THAT SATISFACTORY? I MUST WARN YOU THAT THE ODDS ARE ONE IN FIVE THAT YOU'LL DIE!!
THERE IS ONE CONDITION ON WHICH WE VOLUNTEER, SIR!!
AND THAT IS THAT WE GET NO COMPENSATION FOR IT!
GENTLEMEN, I SALUTE YOU!
UNDER PERFECTLY CONTROLLED SANITARY CONDITIONS KISSINGER WAS PUT INTO IN ONE OF THE TENTS AND MOSQUITOES LADEN WITH BLOOD OF YELLOW FEVER VICTIMS WERE ALLOWED TO FEAST ON THE BRAVE SOLDIERS
KISSINGER SOON BECAME INFECTED WITH YELLOW FEVER AFTER BEING BITTEN SEVEN TIMES!
YOU'VE BEEN A MIGHTY SICK BOY, SOLDIER! BUT YOU'LL RECOVER! THE DANGER PERIOD IS OVER AND YOU HELPED US PROVE PART OF OUR THEORY!
30

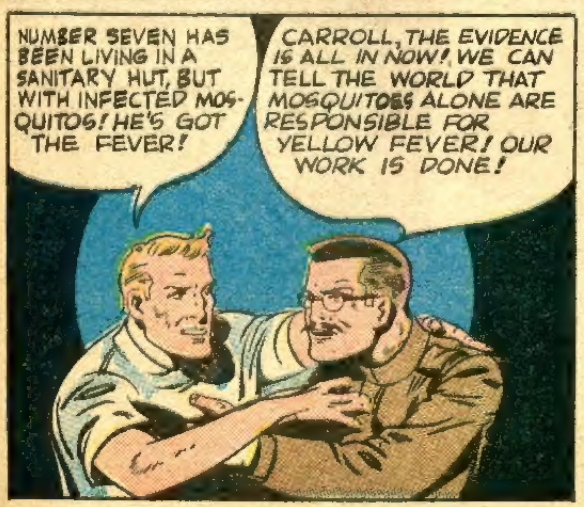
NEXT A WOODEN HUT WAS CONSTRUCTED AT CAMP LAZEAR....
WHAT IS IN THOSE BOXES, MAJOR?
THEY'RE DIRTY BED-SHEETS, PILLOWS AND CLOTHING FROM THE HOSPITALS WHERE MEN DIED OF YELLOW FEVER!

GREAT HEAVENS! DON'T TELL ME SOMEBODY VOLUNTEERED TO LIVE IN THERE AND SLEEP ON THOSE FOUL THINGS!
THAT'S RIGHT! SOME PEOPLE BELIEVE THAT THE DISEASE CAN BE GIVEN TO OTHERS BY CLOTHING OR PERSONAL CONTACT! I CLAIM IT CAN'T. BUT I WANT TO BE SURE!


EXHAUSTIVE TESTS PROVED THAT YELLOW FEVER COULD NOT BE TRANSMITTED BY PERSONAL CONTACT NO MATTER HOW FILTHY THE CONDITIONS WERE AS LONG AS NO MOSQUITOES ARE AROUND TO BITE THE VOLUNTEER!!


ONE DAY, A GROUP OF SPANISH IMMIGRANTS, WHO HAD NEVER BEEN EXPOSED TO YELLOW FEVER ARRIVED AT THE CAMP...
NOW WE CAN TRY ALL OUR THEORIES ALL AT ONCE. WE CAN HAVE SOME IN FILTHY TENTS WITH MOSQUITOES AND WITHOUT MOSQUITOES AND SOME IN SANITARY TENTS BOTH WITH AND WITHOUT MOSQUITOES! THAT OUGHT TO PROVE SOMETHING!

SEVERAL WEEKS LATER...
MAJOR REED, SIR! OUR FINAL FINDINGS HAVE BORNE OUT OUR GREATEST HOPES!
I'VE JUST BEEN GOING OVER THE RECORDS OF IMMIGRANT CASES! HOW ABOUT TENT NUMBER SEVEN AND ITS PATIENT. I HAVE NO FINAL ON IT!

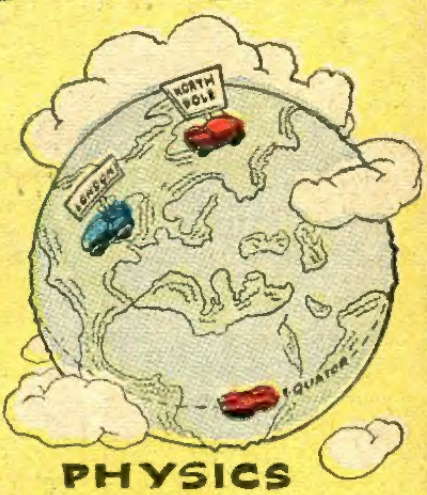

NUMBER SEVEN HAS BEEN LIVING IN A SANITARY HUT, BUT WITH INFECTED MOSQUITOS! HE'S GOT THE FEVER!
CARROLL, THE EVIDENCE IS ALL IN NOW! WE CAN TELL THE WORLD THAT MOSQUITOES ALONE ARE RESPONSIBLE FOR YELLOW FEVER! OUR WORK IS DONE!

SWAMPS AND OTHER PLACES WHICH HARBORED MOSQUITOES WERE EITHER WIPED OUT OR SPRAYED WITH INSECTICIDES TO KILL THE MOSQUITOES.... TO-DAY, THE WALTER REED HOSPITAL, IN WASHINGTON, D.C. IS A MEMORIAL TO THE SOLDIER-SCIENTIST WHO WITH HIS BRAVE, UNSELFISH VOLUNTEERS ENDED FOR ALL TIME ONE OF MANKIND'S MOST DREADED DISEASES.

SCIENCE ODDITIES

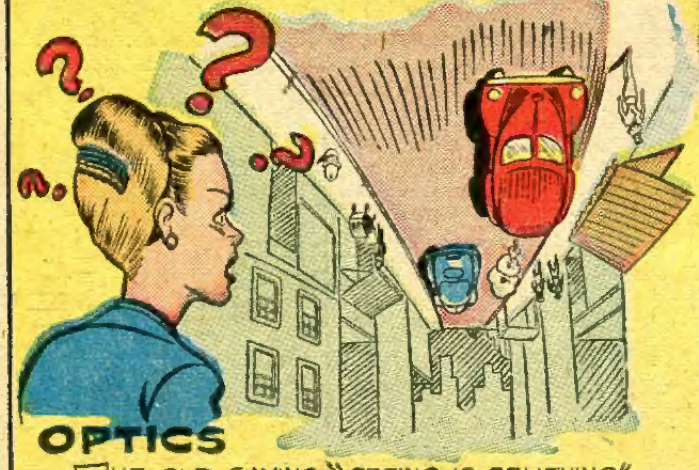
AGRICULTURE

BY SOWING 1,000 POUNDS OF SALT PER ACRE OF CELERY SEEDS, A MID-WEST FARMER HAS SUCCEEDED IN GROWING "PRE-SALTED" CELERY STALKS THAT REQUIRE NO FURTHER SEASONING BEFORE EATING!



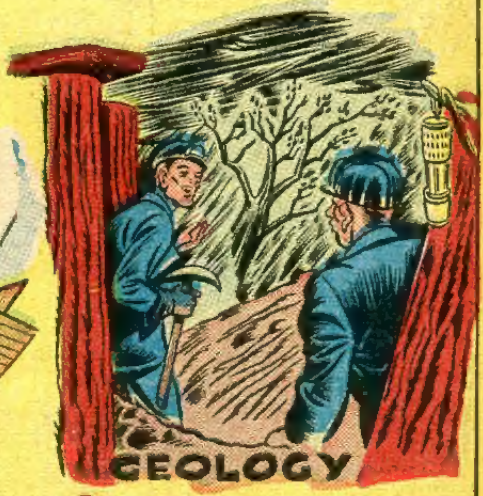
PHYSICS

AN AUTOMOBILE (OR ANY OTHER OBJECT) WEIGHING, FOR EXAMPLE, 2,500 POUNDS IN LONDON, WILL WEIGH ONLY 2,497 ½ POUNDS AT THE EQUATOR, BUT WILL WEIGH 2505 POUNDS AT THE NORTH POLE! THIS IS CAUSED BY THE **CENTRIFUGAL FORCE** THE EARTH BUILDS UP AS IT SPINS AROUND THE SUN!



OPTICS

THE OLD SAYING "SEEING IS BELIEVING" IS NOT TRUE! YOUR EYES SEE EVERYTHING IN AN UPSIDE-DOWN POSITION, BUT YOUR ***BRAIN*** - ACTING AS AN INTERPRETER - PUTS EVERYTHING BACK IN NORMAL POSITION!



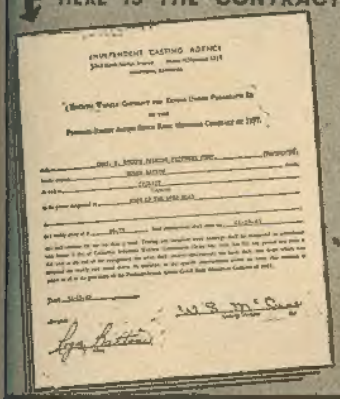
GEOLOGY

COAL TREES ARE FOUND EVERY SO OFTEN IN COAL MINES. BURIED ALIVE MILLIONS OF YEARS AGO, THESE TREES DIFFER FROM THOSE WE SEE EVERY DAY IN THAT THEIR ROOTS, TRUNKS, BRANCHES AND LEAVES HAVE BEEN CONVERTED (BY COMPRESSION AND HEAT) INTO SOLID COAL!

BOYS AND GIRLS! HERE'S HOW I LANDED A MOVIE CONTRACT

"Ever since I can remember," says Roger Batton of Brownwood, Texas, "my ambition was to be a movie star. Now, thanks to Judith Allen's book, HOW TO GET INTO THE MOVIES, I have signed a contract with Monogram Pictures for a swell part in the Charles Roger's production, SONG OF THE OPEN ROAD."

HERE IS THE CONTRACT



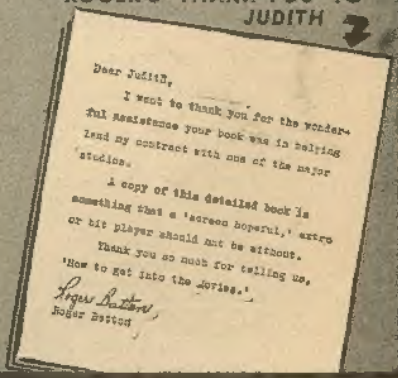
WARNER BROS. PICTURES Inc. EMPLOYEES' STATEMENT

WHAT THE PAPERS SAY

Roger Batton Is In Florida For Filming Of Hollywood Picture

Roger Batton, son of Mr. and Mrs. R. E. Batton, 2207 Avenue D, who is now in Hollywood under

ROGER'S 'THANK YOU' TO JUDITH



Dear Judith,

I want to thank you for the wonderful assistance your book was in helping land my contract with one of the major studios.

A copy of this detailed book is something that a 'screen hopeful,' extra or bit player should not be without.

Thank you so much for telling me, 'How to get into the Movies.'

Roger Batton

Roger Batton

WANTED! *Boys and Girls for the Movies!*

There are plenty of opportunities in Hollywood, but you must know how to take advantage of them.

Let Judith Allen, star of 52 pictures, teach you as she taught Roger Batton. Miss Allen, who has starred with Bing Crosby, Walter Pidgeon, Nelson Eddy, Gene Autry, Cecil B. DeMille, Shirley Temple, has written a book "How to Get Into the Movies." In it she teaches you many of the things you must know and do to get started in Hollywood. She teaches you methods that have been used by herself and such stars as Jean Arthur, Veronica Lake, Lana Turner, Joan Crawford, Joe E. Brown, Brian Aherne, Elizabeth Frazer and many others.

Send for Judith Allen's book today. It may land you a movie contract just as it did Roger Batton. SEND NO MONEY. Fill in coupon below and mail today to Judith Allen, 117 West 48th St., N. Y. 19, N. Y. Dept 87, When Postman delivers your book pay him $1 plus postage and C.O.D. charges. If you send cash with order, Judith Allen will pay all postage AND IN ADDITION, AUTOGRAPH YOUR COPY. Guarantee: If not pleased, return book within 5 days and get your $1 back.

MAIL COUPON NOW

Miss Judith Allen
117 W. 48th St., N. Y. 19, N. Y., Dept. 87

Dear Miss Allen: Please send me your book, "How to Get Into the Movies." I will pay the postman $1 plus postage and C.O.D. charges. It is understood that if I am not satisfied I may return the book within 5 days and get my money back.

NAME .....
(PLEASE PRINT)

ADDRESS .....

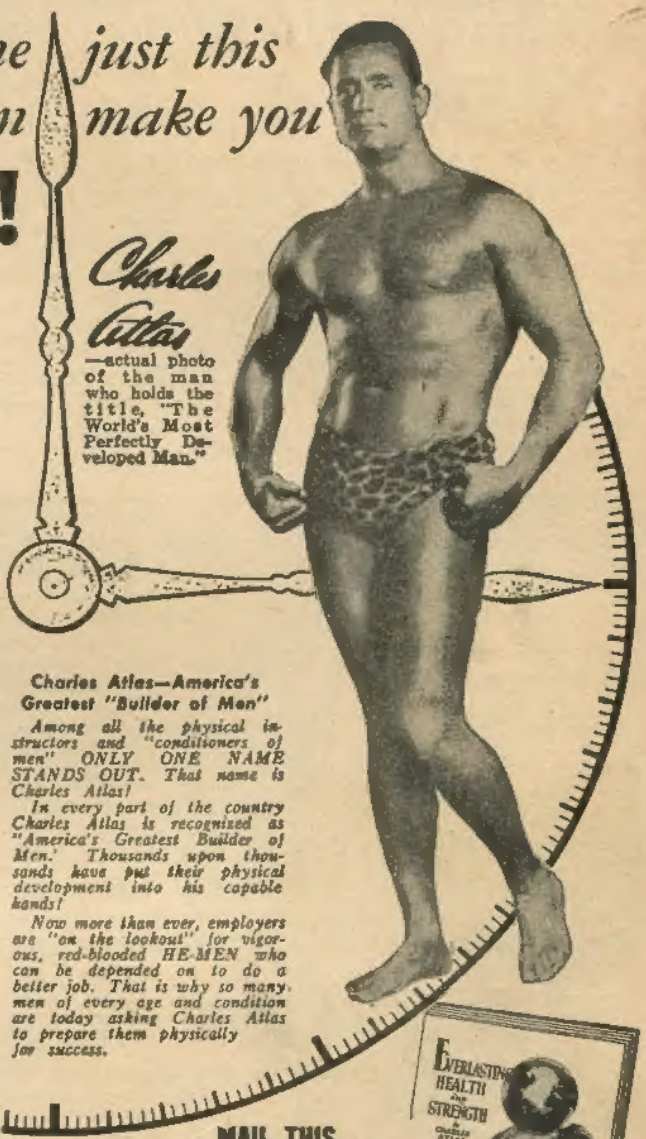
CITY ..... STATE .....

☐ Check here if you enclose $1 to save all postage charges and have Judith Allen autograph your book. Same money-back guarantee applies. Canadian orders must be accompanied by cash or money order.

15 Minutes a Day!

Give me just this and I'll prove I can make you

A NEW MAN!



Charles Atlas
—actual photo of the man who holds the title, "The World's Most Perfectly Developed Man."

I'M "trading-in" old bodies for new! I'm taking men who know that the condition of their arms, shoulders, chests and legs —their strength, "wind," and endurance—is not 100%. And I'm making NEW MEN of them. I'm giving them the kind of powerful, healthy HE-MAN build that spells SUCCESS in life and business.

Only 15 Minutes a Day!

Are you ALL MAN—tough-muscled, on your toes every minute, with all the up-and-at-'em that can lick your weight in wildcats? *Or do you need the help I can give you* — the help that has already worked such wonders for other fellows, everywhere?

All the world knows I was ONCE a skinny, scrawny 97-lb. weakling. And NOW it knows that I am the holder of the title "The World's Most Perfectly Developed Man." How did I do it? How do I work miracles with the bodies of other men in only 15 minutes a day? The answer is *"Dynamic Tension,"* the amazing method I discovered and which changed me from a 97-pound weakling into the champion you see here!

In just 15 minutes a day, right in the privacy of your own home, I'm ready to prove that *"Dynamic Tension"* can lay a new outfit of solid muscle over every inch of your body. Let me put new, smashing power into your arms and shoulders—give you an armor-shield of stomach muscle—strengthen your legs into real columns of surging stamina. If lack of exercise or wrong living has weakened you *inside*, I'll get after that condition, too, and show you how it feels to LIVE!

Charles Atlas—America's Greatest "Builder of Men"

Among all the physical instructors and "conditioners of men" ONLY ONE NAME STANDS OUT. That name is Charles Atlas!

In every part of the country Charles Atlas is recognized as "America's Greatest Builder of Men." Thousands upon thousands have put their physical development into his capable hands!

Now more than ever, employers are "on the lookout" for vigorous, red-blooded HE-MEN who can be depended on to do a better job. That is why so many men of every age and condition are today asking Charles Atlas to prepare them physically for success.

MAIL THIS COUPON NOW!

FREE *This Famous Book that Tells You How to Get a Body that Men Respect and Women Admire*

My book, *"Everlasting Health and Strength,"* tells you exactly what *"Dynamic Tension"* can do And it's packed with pictures that SHOW you what it does. RESULTS it has produced for other men. RESULTS I want to prove it can get for YOU! If you want to learn how you can actually become a NEW MAN, right in the privacy of your own home and in only 15 minutes a day, then man!—get this coupon into the mail to me as fast as your legs can get to the letterbox! CHARLES ATLAS, Dept. 255C 115 East 23rd St., New York 10, N. Y.

CHARLES ATLAS, Dept. 255C
115 East 23rd St., New York 10, N. Y.

I want the proof that your system of *"Dynamic Tension"* will help make a New Man of me—give me a healthy, husky body and big muscular development. Send me your free book, *"Everlasting Health and Strength."*

Name.....
(Please print or write plainly)

Address.....

City..... Zone No. (if any)... State.....

☐ Check here if under 16 for Booklet A.